College Level Practice Test for Accuplacer

A. Algebraic operations

$\frac{(x+7)(x-7)}{(x+1)} \cdot \frac{x}{(-1)(x-7)} = \frac{x(x+7)}{-(x+1)}$

1. Where defined, $\frac{x^2-49}{x+1} \div \frac{7-x}{x}$ reduces to

a) $\frac{(x^2-49)(7-x)}{(x+1)x}$ b) $\frac{-x(x+7)}{x+1}$ c) $\frac{-x(x-7)}{x+1}$ d) $\frac{7(x^2-49)}{x+1}$

2. Where defined, $\frac{2a^2-2}{4a^2+16a+12}$ reduces to $\frac{2(a^2-1)}{4(a^2+4a+3)} = \frac{2(a+1)(a-1)}{4(a+1)(a+3)} = \frac{2(a-1)}{4(a+3)} = \frac{a-1}{2(a+3)}$

a) $\frac{1}{16a-4}$ b) $\frac{1}{4a+2}$ c) $\frac{a-1}{2(a+3)}$ d) $\frac{a+1}{2a+6}$

3. Factor $4x^2+8x-12$ completely. $4(x^2+2x-3) = 4(x+3)(x-1)$

a) $(4x+1)(x-12)$ b) $[2(x-4)]^2$ c) $4(x-1)(x+3)$ d) $4(x-3)(x+1)$

4. Expand $(-x)(x-4)(2x+1)$. $(-x)(2x^2-7x-4) = -2x^3+7x^2+4x$

a) $2x^3-7x^2+4x$ b) $-2x^3+7x^2+4x$ c) $2x^3+7x^2-4x$ d) $-2x^3-7x^2-4x$

5. Give the exponential representation of the radical expression $\frac{1}{\sqrt[5]{x^5}}$. $= \frac{1}{(x)^{5/2}} = x^{-5/2}$

a) $x^{-1/5}$ b) $x^{-5/2}$ c) $x^{-2/5}$ d) x^{-5}

6. Evaluate $\left(\frac{25}{64}\right)^{3/2}$. $= \left(\frac{25^{-1/2}}{64^{1/2}}\right)^3 = \left(\frac{5}{8}\right)^3 = \frac{125}{512}$

$\sqrt[3]{64} = \frac{8}{512}$

a) $\frac{75}{128}$ b) $\frac{25}{36}$ c) $\frac{125}{512}$ d) $\frac{8}{5}$

7. Simplify $x^{3/2}x^{-2}$ and eliminate any negative exponents. Assume all letters denote positive numbers.

$x^{3/2}x^{-4/2} = x^{-1/2} = \frac{1}{x^{1/2}} = \frac{1}{\sqrt{x}}$

a) x^3 b) $\frac{1}{x^3}$ c) $\frac{1}{\sqrt{x}}$ d) $\sqrt{x}$

emphasize trig (unit circle system (slope, intersection) - concepts

B. Solutions of equations and inequalities

8. For what real numbers x is $x^2-x-12=0$?

a) 4 and -3 b) -4 and 3 c) -4 and -3 d) 4 and 3

9. For what real numbers x is $3x^2+5x-2$ positive?

a) $\left(-2,\frac{1}{3}\right)$ b) $(-\infty,-2)$ and $\left(\frac{1}{3},\infty\right)$ c) $(-\infty,-2)$ d) $\left(-\infty,\frac{1}{3}\right)$ and $(-2,\infty)$

10. Solve for m: $-\frac{2}{3}(m-3)<\frac{1}{2}(5-m)$

a) $m>3$ b) $m<-3$ c) $m>-3$ d) $m<3$

11. Solve for x: $(x+2)^2=8$. Be sure the value of x is in simplified radical form.

a) $x=2\pm2\sqrt{2}$ b) $x=\pm\sqrt{6}$ c) $x=2\pm\sqrt{8}$ d) $x=-2\pm2\sqrt{2}$

12. A root of $x^2-7x+3=0$ is

a) $\frac{-7+\sqrt{61}}{2}$ b) $7+\sqrt{37}$ c) $\frac{-7+\sqrt{37}}{2}$ d) $\frac{7+\sqrt{37}}{2}$

13. If $3x^2-4x+7=0$, then $\left(x-\frac{2}{3}\right)^2=$

a) $\frac{17}{9}$ b) $\frac{17}{9}$ c) $\frac{5}{9}$ d) $-\frac{5}{9}$

C. Coordinate geometry

14. If $M(-2,3)$ is the midpoint of segment PQ and the coordinates of P are $(-8,5)$, find the coordinates of Q.

a) $(4,1)$ b) $(-10,8)$ c) $(-1,-4)$ d) $(-5,4)$

15. The graph of $f(x)=(x-5)^3$ is the same as the graph of $f(x)=x^3$ except that it is shifted

a) five units down b) five units up c) five units to the left d) five units to the right

16. What quadrant is the vertex of $f(x)=-3(x-2)^2+6$ in?

a) I b) II c) III d) IV

17. Does $y = 4x + 3$ cross the x-axis, y-axis, neither, or both?

a) x-axis b) y-axis c) neither d) both

18. An equation of the line that contains the origin and the point $(-2,3)$ is

a) $y = -\frac{3}{2}x$ b) $y = -\frac{2}{3}x$ c) $y = -2x + 3$ d) $y = \frac{-3}{2}x + 1$

19. Decide if the lines $2x + 5y = -6$ and $5x - 2y = 1$ are parallel, perpendicular, or neither.

$5y = -6 - 2x$

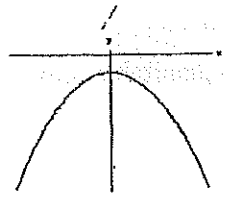
$y = -\frac{6}{5} - \frac{2}{5}x$

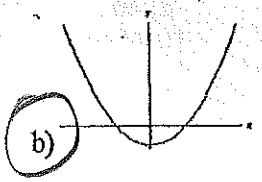
$-2y = 1 - 5x$

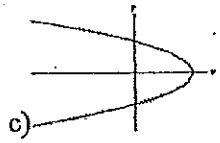
$y = -\frac{1}{2} + \frac{5}{2}x$

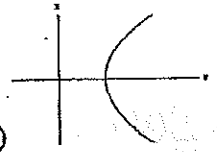
a) parallel b) perpendicular c) neither

20. Which of the following could represent the graph of $y = x^2 - b$?

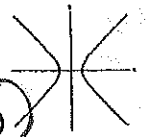
a) 

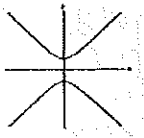
b) 

c) 

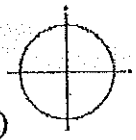
d) 

21. Which of the following could represent the graph of $x^2 - y^2 = 1$?

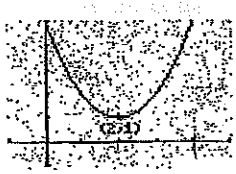
a) 

b) 

c)

d) 

22. Determine the domain and range of the following graph:



a) Domain $= (-\infty, \infty)$, Range $= [1, \infty)$

b) Domain $= (-\infty, \infty)$, Range $= (1, \infty)$

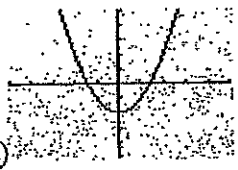
c) Domain $= [1, \infty)$, Range $= (-\infty, \infty)$

d) Domain $= (1, \infty)$, Range $= (-\infty, \infty)$

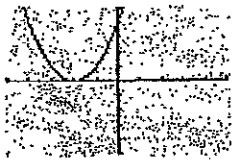
23. Which of the following best describes the set $\{(3,2),(-1,5),(5,7),(2,6),(4,-6)\}$?

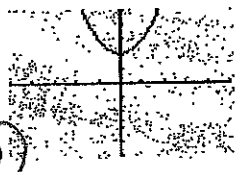
a) finite set b) one-to-one function c) function d) a, b, and c

24. Which of the following is the graph of $y = x^2 + 2$?

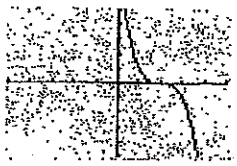
a) 

b)

c) 

d) 

25. Which of the following is the graph of $y=(x-2)^3$?

a) b) c) d) 

D. Applications and other algebra topics

26. Find the product: $\sqrt{-5}\cdot\sqrt{-7}$ $\sqrt{-1}\cdot\sqrt{5}\cdot\sqrt{-1}\sqrt{7} = i\sqrt{5}\cdot i\sqrt{7} = i^2\sqrt{35} = -\sqrt{35}$

a) $\sqrt{35}$ b) $-\sqrt{35}$ c) $i\sqrt{35}$ d) $\sqrt{35i}$

27. Simplify $(6-2i)^2$. $36-12i-12i+4i^2 = 36-24i-4 = 32-24i$

a) $40-24i$ b) $36+4i^2$ c) $32-24i$ d) 40

28. Find the value of $\sum_{k=1}^{3}(k^2+1)$. $= 2+5+10 = 17$

a) 15 b) 16 c) 17 d) 18

29. Determine the value of x in the geometric sequence $\left\{1,-\frac{2}{3},\frac{4}{9},-\frac{8}{27},x\right\}$. $\frac{16}{81}$ $\frac{27}{3}$ $\frac{3}{11}$

a) $\frac{12}{36}$ b) $-\frac{12}{36}$ c) $-\frac{16}{81}$ d) $\frac{16}{81}$

30. Evaluate $|A|$ for $A=\begin{bmatrix}6 & -3\\ 2 & 3\end{bmatrix}$. $(6)(3)-(-3)(2) = 18+6 = 24$

a) 8 b) −12 c) 17 d) 24

31. Which of the following matrices does not have an inverse?

a) $\begin{bmatrix}6 & 5\\ 3 & 2\end{bmatrix}$ b) $\begin{bmatrix}-1 & 2\\ -2 & 4\end{bmatrix}$ $-2\times$ 1st row c) $\begin{bmatrix}7 & 6\\ 1 & 1\end{bmatrix}$ d) $\begin{bmatrix}0 & 1\\ 1 & 0\end{bmatrix}$

32. How many ways can you arrange 4 books on a shelf?

a) 30 b) 6 c) 10 d) 24

$4! = 4\cdot 3\cdot 2\cdot 1$

33. How many 3 letter passwords can be formed from the letters A, B, C, D, E? $_5P_3 = 5\cdot 4\cdot 3$

a) 120 b) 60 c) 20 d) 12

34. How many different committees of 3 people can be formed from a pool of 7 people?

a) 21 b) 10 c) 35 d) 238

35. Anoka Ramsey Community College needs two additional faculty members, one in biology and one in math. In how many ways can these two positions be filled if there are four applicants for the biology position and five for the math position?

a) 20 b) 9 c) 40 d) 11

36. For what values of x is $\frac{x^2-4x+3}{x^2+x-2}$ undefined?

a) 2 and –1 b) 2 and 1 c) –2 and –1 d) –2 and 1

37. Where defined, $\frac{1-\frac{1}{y}}{\frac{1}{y}}$ reduces to

a) $y-1$ b) $\frac{1}{y}$ c) y d) 1

38. A rectangular garden is 12 feet long. If its area is 120 ft^2, what is the width of the garden?

a) 108 feet b) 10 feet c) 12 feet d) 32 feet

39. A boat on a river travels downstream between two points, 20 miles apart, in one hour. The return trip against the current takes 2 ½ hours. What is the speed of the boat?

a) 8 mi/hr b) 16 mi/hr c) 14 mi/hr d) 10 mi/hr

E. Functions and trigonometry

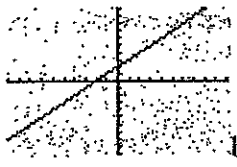
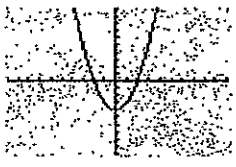
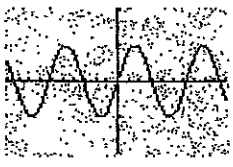
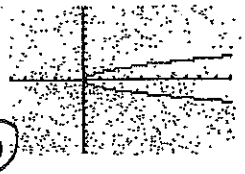
40. Find the x-intercepts of $f(x)=4x^2+x-3$.

a) 0.75 and 1 b) 0.75 and –1 c) –0.75 and –1 d) –0.75 and 1

41. Find the y-intercept(s) of $f(x)=x^3+2x^2-5x+6$.

a) 6 b) –5 c) –4 d) 0

42. Which of the following is NOT the graph of a function?

a)  b)  c)  d) 

43. If $f(x)=x^2-3x+4$, then $f(a)-f(-1)=$ $a^2-3a+4-(1+3+4)$ $a^2-3a+4-8=a^2-3a-4$

a) $a^2-3a+10$ b) a^2-3a-4 c) a^2-3a+4 d) $a^2-3a+12$

44. If $\frac{1}{64}=2^x$, then $x=$ $(64)^{-1}=2^x$ $(2^6)^{-1}=2^x=2^{-6}$

a) 6 b) -6 c) -5 d) 5

45. The graph of the function $f(x)=e^x-1$ is

a) always positive b) always negative c) always increasing d) always decreasing

46. Express the equation in logarithmic form: $5^3=125$ $\log_5 125=3$

a) $\log 5^3=125$ b) $\log_3 125=5$ c) $\log_5 3=125$ d) $\log_5 125=3$

47. Evaluate the expression: $\log_4 64=x$ $y^x=64$

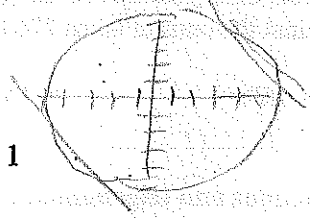
a) 16 b) 32 c) 4 d) 3

48. Which of the following equals ½?

a) $\sin 30°$ b) $\cos 30°$ c) $\tan 30°$ d) $\sin 60°$

49. The following is a graph of $y=\sin^2 x+\cos^2 x+k$. Find the value of k. ? no graph

a) 1 b) 6 c) 4 d) 5



50. How many lines with a slope of -1 are tangent to the circle $x^2+y^2=25$?

a) 4 b) 0 c) 2 d) 1

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1) b
2) c
3) c
4) b
5) b
6) c
7) c
8) a
9) b
10) c
11) d
12) d
13) b
14) a
15) d
16) a
17) d
18) a
19) b
20) b
21) a
22) a
23) d
24) d
25) a
26) b
27) c
28) c
29) d
30) d
31) b
32) d
33) b
34) c
35) a
36) d
37) a
38) b
39) c
40) b
41) a
42) d
43) b
44) b
45) c
46) d
47) d
48) a
49) d
50) c

College Level Practice Test for Accuplacer

A. Algebraic operations

1. Where defined, $\frac{x^2-49}{x+1} \div \frac{7-x}{x}$ reduces to

a) $\frac{(x^2-49)(7-x)}{(x+1)x}$ b) $\frac{-x(x+7)}{x+1}$ c) $\frac{-x(x-7)}{x+1}$ d) $\frac{7(x^2-49)}{x+1}$

2. Where defined, $\frac{2a^2-2}{4a^2+16a+12}$ reduces to

a) $\frac{1}{16a-4}$ b) $\frac{1}{4a+2}$ c) $\frac{a-1}{2(a+3)}$ d) $\frac{a+1}{2a+6}$

3. Factor $4x^2+8x-12$ completely.

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9. For what real numbers x is $3x^2 + 5x - 2$ positive?

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a) $m > 3$ b) $m < -3$ c) $m > -3$ d) $m < 3$

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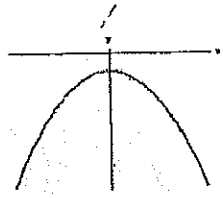
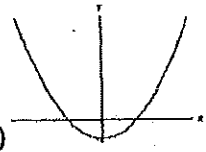
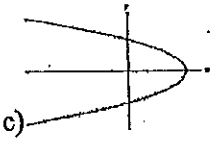
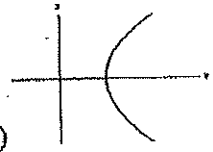
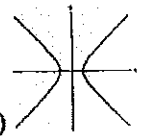
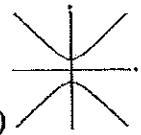
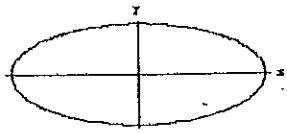
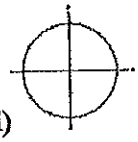
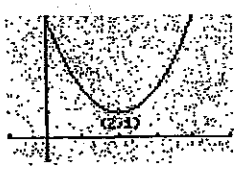
a)  b)  c)  d) 

21. Which of the following could represent the graph of $x^2-y^2=1$?

a)  b)  c)  d) 

22. Determine the domain and range of the following graph:



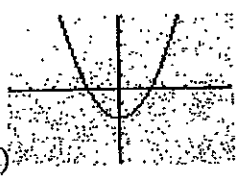
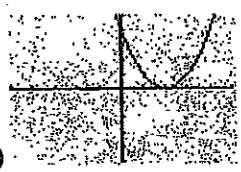
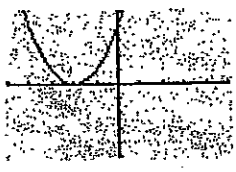
a) Domain $=(-\infty,\infty)$, Range $=[1,\infty)$ b) Domain $=(-\infty,\infty)$, Range $=(1,\infty)$

c) Domain $=[1,\infty)$, Range $=(-\infty,\infty)$ d) Domain $=(1,\infty)$, Range $=(-\infty,\infty)$

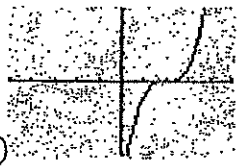
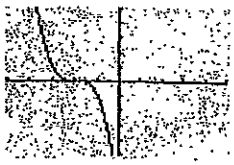
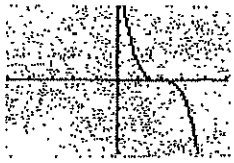
23. Which of the following best describes the set $\{(3,2),(-1,5),(5,7),(2,6),(4,-6)\}$?

a) finite set b) one-to-one function c) function d) a, b, and c

24. Which of the following is the graph of $y=x^2+2$?

a)  b)  c)  d)

25. Which of the following is the graph of $y=(x-2)^3$?

a)  b) c)  d) 

D. Applications and other algebra topics

26. Find the product: $\sqrt{-5}\cdot\sqrt{-7}$

a) $\sqrt{35}$ b) $-\sqrt{35}$ c) $i\sqrt{35}$ d) $\sqrt{35i}$

27. Simplify $(6-2i)^2$.

a) $40-24i$ b) $36+4i^2$ c) $32-24i$ d) 40

28. Find the value of $\sum_{k=1}^{3}(k^2+1)$.

a) 15 b) 16 c) 17 d)18

29. Determine the value of x in the geometric sequence $\left\{1,-\frac{2}{3},\frac{4}{9},-\frac{8}{27},x\right\}$.

a) $\frac{12}{36}$ b) $-\frac{12}{36}$ c) $-\frac{16}{81}$ d) $\frac{16}{81}$

30. Evaluate $|A|$ for $A=\begin{bmatrix}6 & -3\\ 2 & 3\end{bmatrix}$.

a) 8 b) –12 c) 17 d) 24

31. Which of the following matrices does not have an inverse?

a) $\begin{bmatrix}6 & 5\\ 3 & 2\end{bmatrix}$ b) $\begin{bmatrix}-1 & 2\\ -2 & 4\end{bmatrix}$ c) $\begin{bmatrix}7 & 6\\ 1 & 1\end{bmatrix}$ d) $\begin{bmatrix}0 & 1\\ 1 & 0\end{bmatrix}$

32. How many ways can you arrange 4 books on a shelf?

a) 30 b) 6 c)10 d) 24

33. How many 3 letter passwords can be formed from the letters A, B, C, D, E?

a) 120 b) 60 c) 20 d) 12

34. How many different committees of 3 people can be formed from a pool of 7 people?

a) 21 b) 10 c) 35 d) 238

35. Anoka Ramsey Community College needs two additional faculty members, one in biology and one in math. In how many ways can these two positions be filled if there are four applicants for the biology position and five for the math position?

a) 20 b) 9 c) 40 d) 11

36. For what values of x is $\frac{x^2-4x+3}{x^2+x-2}$ undefined?

a) 2 and -1 b) 2 and 1 c) -2 and -1 d) -2 and 1

37. Where defined, $\frac{1-\frac{1}{y}}{\frac{1}{y}}$ reduces to

a) $y-1$ b) $\frac{1}{y}$ c) y d) 1

38. A rectangular garden is 12 feet long. If its area is 120 ft^2, what is the width of the garden?

a) 108 feet b) 10 feet c) 12 feet d) 32 feet

39. A boat on a river travels downstream between two points, 20 miles apart, in one hour. The return trip against the current takes 2 ½ hours. What is the speed of the boat?

a) 8 mi/hr b) 16 mi/hr c) 14 mi/hr d) 10 mi/hr

E. Functions and trigonometry

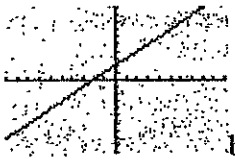
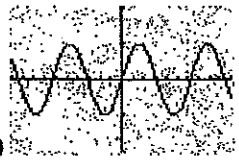
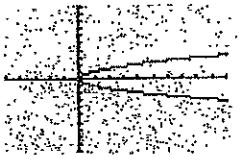
40. Find the x-intercepts of $f(x)=4x^2+x-3$.

a) 0.75 and 1 b) 0.75 and -1 c) -0.75 and -1 d) -0.75 and 1

41. Find the y-intercept(s) of $f(x)=x^3+2x^2-5x+6$.

a) 6 b) -5 c) -4 d) 0

42. Which of the following is NOT the graph of a function?

a)  b) c)  d) 

43. If $f(x)=x^2-3x+4$, then $f(a)-f(-1)=$

a) $a^2-3a+10$ b) a^2-3a-4 c) a^2-3a+4 d) $a^2-3a+12$

44. If $\frac{1}{64}=2^x$, then $x=$

a) 6 b) –6 c) –5 d) 5

45. The graph of the function $f(x)=e^x-1$ is

a) always positive b) always negative c) always increasing d) always decreasing

46. Express the equation in logarithmic form: $5^3=125$

a) $\log 5^3=125$ b) $\log_3 125=5$ c) $\log_5 3=125$ d) $\log_5 125=3$

47. Evaluate the expression: $\log_4 64$

a) 16 b) 32 c) 4 d) 3

48. Which of the following equals ½?

a) $\sin 30^\circ$ b) $\cos 30^\circ$ c) $\tan 30^\circ$ d) $\sin 60^\circ$

49. The following is a graph of $y=\sin^2 x+\cos^2 x+k$. Find the value of k.

a) 1 b) 6 c) 4 d) 5

50. How many lines with a slope of –1 are tangent to the circle $x^2+y^2=25$?

a) 4 b) 0 c) 2 d) 1

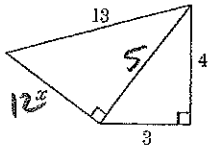
College Level Practice Test for Accuplacer: ANSWERS

1) b
2) c
3) c
4) b
5) b
6) c
7) c
8) a
9) b
10) c
11) d
12) d
13) b
14) a
15) d
16) a
17) d
18) a
19) b
20) b
21) a
22) a
23) d
24) d
25) a
26) b
27) c
28) c
29) d
30) d
31) b
32) d
33) b
34) c
35) a
36) d
37) a
38) b
39) c
40) b
41) a
42) d
43) b
44) b
45) c
46) d
47) d
48) a
49) d
50) c

Name Key Date

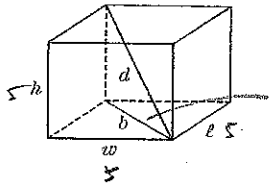
1. Find the length of side x.

a) 10 b) 12 c) 14 d) 144 e) 194



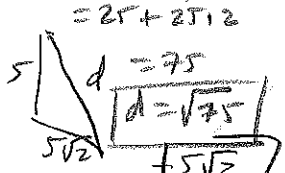
Pythagorean triples

2. The dimensions of the box shown are as follows: $h = 5$, $w = 5$, and $\ell = 5$. What is the the length of diagonal d?

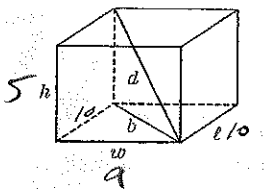


$b = 5\sqrt{2}$

$d^2 = 5^2 + (5\sqrt{2})^2$
$= 25 + 25 \cdot 2$
$= 75$
$d = \sqrt{75}$
$d = 5\sqrt{3}$

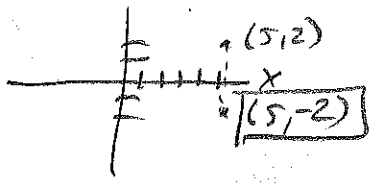


3. In this diagram of a box, $h = 5$, $w = 9$, and $\ell = 10$. Find d.

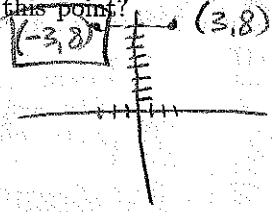


$b^2 = 9^2 + 10^2 = 181$
$b = \sqrt{181}$
$d^2 = 5^2 + (\sqrt{181})^2 = 25 + 181$
$d^2 = 206$ $d = \sqrt{206}$

4. The point $(5, 2)$ is reflected in the x-axis. What is the image of this point?



5. The point $(3, 8)$ is reflected in the y-axis. What is the image of this point?



6. What is the sum of the solutions of $|3x - 3| = 15$?

a) -10 b) -2 c) 0 d) 2 e) 6

$3x - 3 = 15$ $3x - 3 = -15$
$3x = 18$ $3x = -12$
$x = 6$ $x = -4$

7. Determine the distance between the points $(-2, 3)$ and $(4, 9)$.

a) $\sqrt{142}$ b) $\sqrt{146}$ c) $4\sqrt{3}$ d) $6\sqrt{2}$ e) 12

$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$
$= \sqrt{(-2-4)^2 + (3-9)^2}$
$= \sqrt{36 + 36}$
$= \sqrt{72} = \sqrt{36}\sqrt{2} = 6\sqrt{2}$

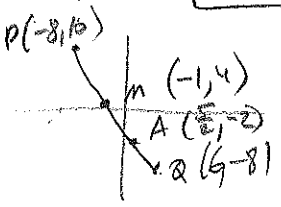
8. Point **R** lies on the line segment joining **P**$(-7, 8)$ and **Q**$(5, -4)$. If **PR** = **RQ**, what are the coordinates of **R**?

a) $(-6, 6)$ b) $(-1, 2)$ c) $(1, -2)$ d) $(6, -6)$ e) $(1, 6)$

R is midpt $= \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
$= \left(\frac{-7+5}{2}, \frac{8-4}{2}\right)$
$= (-1, 2)$

9. Point **P**$(-8, 16)$ and **Q**$(6, -8)$ are the endpoints of a line segment **PQ**. Point **M** is the midpoint of segment **PQ** and point **A** is the midpoint of segment **MQ**. What are the coordinates of **A**?

a) $(-2, 4)$ b) $(-1, 4)$ c) $(-\frac{1}{2}, 2)$ d) $(\frac{1}{2}, -2)$ e) $(\frac{5}{2}, -2)$



10. Which of the following best describes the lines $y - 3 = 4x$ and $6 - 2y = 8x$?

a) coincident b) parallel c) intersecting d) perpendicular e) skew

$y = 4x + 3$ $-2y = 8x - 6$
$y = -4x + 3$

11. What is the slope of all lines parallel to the line $3x + 7y = -7$?

a) $-\frac{7}{3}$ b) $-\frac{3}{7}$ c) -1 d) $\frac{3}{7}$ e) $\frac{7}{3}$

$7y = -3x - 7$

$y = -\frac{3}{7}x - 1$

12. A 2-ft wide window consists of a 5 foot by 2 foot rectangle with a semicircle on top as shown in the diagram. Find the total distance around the window. [Use $\pi \approx 3.14$]

a) 24.14 ft b) 20.28 ft c) 18.28 ft

d) 16.28 ft e) 15.14 ft

$\frac{1}{2}(2\pi r)$

12

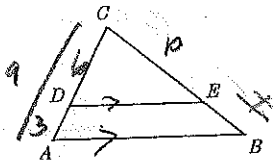
3.14

15.14

13. In the diagram, $\mathbf{DE} \parallel \mathbf{AB}$, $\mathbf{CA} = 9$, $\mathbf{DA} = 3$, and $\mathbf{CE} = 10$. Find $\mathbf{EB}$.

a) 2.5 b) 3 c) 4

d) 4.5 e) 5



$\frac{6}{3} = \frac{10}{x}$

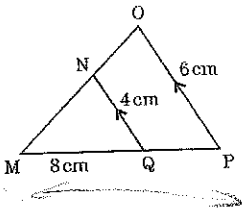
$x = 5$

14. In the figure, $\mathbf{NQ}$ is parallel to $\mathbf{OP}$ and $\mathbf{NQ} = 4$, $\mathbf{OP} = 6$, and $\mathbf{MQ} = 8$. How long is $\mathbf{MP}$?

a) 4 b) 10 c) 12

d) 14 e) 16

$\frac{8}{x} = \frac{4}{6}$ $4x = 48$ $x = 12$



15. The ratio of chairs to tables at a certain restaurant is 20 to 3. If there are 120 chairs in the restaurant, how many tables are there?

a) 12 b) 18 c) 24 d) 56 e) 120

$\frac{20}{3} = \frac{120}{x}$ $20x = 360$ $2x = 36$ $x = 18$

16. A Mexican restaurant serves tacos, fajitas, and chalupas. If the ratio of tacos to fajitas to chalupas is $7:5:3$ and there were 210 tacos served, how many chalupas were served?

a) 30 b) 90 c) 105 d) 150 e) 210

$\frac{7}{3} = \frac{210}{x}$ $7x = 210 \cdot 3$ $x = 30 \cdot 3 = 90$

17. Simplify: $\dfrac{x^2+x-6}{x^2-9} \div \dfrac{x^2-4}{x^2+5x+6}$

$\frac{(x+3)(x-2)}{(x+3)(x-3)} \cdot \frac{(x+3)(x+2)}{(x+1)(x-2)}$

a) $\dfrac{x+3}{x-3}$ b) $\dfrac{(x-2)^2}{(x-3)(x+3)}$

c) $\dfrac{x-3}{x+3}$ d) -1

e) 1

18. If $f(x) = 3x - 1$ and $g(x) = 4x + 3$, then $f[g(x)] =$

a) $12x^2 + 5x - 3$ b) $12x^2 + 13x - 3$

c) $7x + 2$ d) $12x - 1$

e) $12x + 8$

$3(4x+3) - 1 = 12x + 9 - 1 = 12x + 8$

19. Find $f^{-1}(x)$ if $f(x) = \dfrac{2}{x} + 1$.

a) $\dfrac{2}{x+1}$ b) $\dfrac{2}{x-1}$ c) $\dfrac{2}{1-x}$

d) $2(x-1)$ e) $x - \dfrac{1}{2}$

$y = \frac{2}{x} + 1$

$x = \frac{2}{y} + 1$

$x - 1 = \frac{2}{y}$

$y(x-1) = 2$ $y = \frac{2}{x-1} = f^{-1}(x)$

20. What is the value of $\dfrac{4^0 + 1^4}{3^{-1}}$?

$\frac{1+1}{\frac{1}{3}} = 2(3) = 6$

a) 24 b) 15 c) 6 d) $\frac{5}{3}$ e) $\frac{2}{3}$

21. Solve $3x^2 - 5x - 1 = 0$ using the Quadratic Formula.

a) $\frac{-10 \pm \sqrt{101}}{3}$ b) $\frac{-5 \pm \sqrt{37}}{6}$ $\boxed{\text{c) } \frac{5 \pm \sqrt{37}}{6}}$

d) $\frac{10 \pm \sqrt{101}}{9}$ e) $\frac{10 \pm \sqrt{101}}{3}$

$\frac{5 \pm \sqrt{25+4(3)}}{6} = \frac{5 \pm \sqrt{37}}{6}$

22. Solve for x: $16^{x-1} = 8^x$

a) $x = -1$ b) $x = \frac{1}{4}$ c) $x = 1$

d) $x = \frac{4}{3}$ $\boxed{\text{e) } x = 4}$

$(2^4)^{x-1} = (2^3)^x$

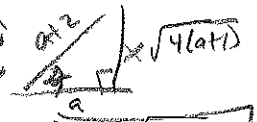
$(2)^{4x-4} = (2)^{3x}$

$4x - 4 = 3x$

$x = 4$

23. Find $\tan\theta$ if $\cos\theta = \frac{a}{a+2} = \frac{adj}{hyp}$

SOHCAHTOA



a) $\frac{2\sqrt{a+1}}{a+2}$ b) $\frac{4(a+1)}{a+2}$ $\boxed{\text{c) } \frac{2\sqrt{a+1}}{a}}$

d) $\frac{4(a+1)}{a}$ e) $\frac{\sqrt{a+1}}{2a}$

$\frac{\sqrt{4(a+1)}}{a}$

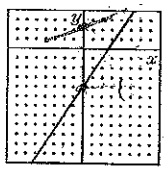
$\frac{2\sqrt{a+1}}{a}$

$a^2 + x^2 = (a+2)^2$

$a^2 + x^2 = a^2 + 4a + 4$

$x^2 = 4a + 4 = 4(a+1)$

24. If $x - 2y + 2 = 0$ were graphed on the graph, at what point would it intersect the line shown?



Can't find slope accurately from graph

25. If $f(x) = 2x + 1$ and $g(x) = \frac{x-1}{2}$, then find:

a) $f(-4) = 2(-4)+1 = \boxed{-7}$

b) $g(-7) = \frac{-7-1}{2} = \boxed{-4}$

c) $f(5n) - g(2n+5) =$

c) $2(5n)+1 - \frac{(2n+5)-1}{2}$

$= 10n + 1 - \frac{2n+4}{2}$

$= 10n + 1 - n - 2$

$= \boxed{9n - 1}$

d) $f[g(3n)] = 2\left(\frac{3n-1}{2}\right)+1 = 3n - 1 + 1 = \boxed{3n}$

e) $f[g(6)] = 2\left(\frac{6-1}{2}\right)+1 = 6 - 1 + 1 = \boxed{6}$

f) $g[f(6)] = \frac{2(6)+1-1}{2} = \boxed{6}$

bad examples in general $f(g(x)) \neq g(f(x))$

26. What is the equation of the parabola that opens down, has a vertex $V(-3, 0)$, and a y-intercept of -36?

a) $y = 4(x+3)^2$ $\boxed{\text{b) } y = -4(x+3)^2}$

c) $y = 4(x-3)^2$ d) $y = -4x^2 - 3$

e) $y = -4(x-3)^2$

$(y-k) = A(x-h)^2$ (p neg)

$y - 0 = A(x+3)^2$

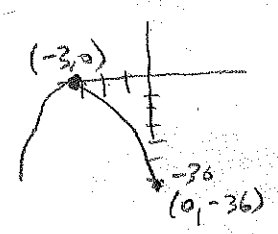
$y = A(x+3)^2$

$-36 = A(0+3)^2$

$-36 = 9A$

$A = -4$

$y = -4(x+3)^2$



27. The parabola $y = 5x^2 + 20x + 14$ will have

$\boxed{\text{a) a minimum at } (-2, -6)}$

b) a minimum at $(-2, 10)$

c) a minimum at $(10, -86)$

d) a maximum at $(-2, -6)$

e) a maximum at $(-2, 6)$

$5(x^2 + 4x + 4) = y - 14 + 20$

$5(x+2)^2 = y + 6$

vertex $(-2, -6)$

min

28. The parabola $y = -x^2 + 4x + 1$ will have

a) a maximum of 2 b) a minimum of 2

$\boxed{\text{c) a maximum of 5}}$ d) a minimum of 5

e) a maximum of -5

$-(x^2 - 4x + 4) = y - 1 - 4$

$-(x-2)^2 = y - 5$ max @ $(2, 5)$

29. Express $\frac{8\pi}{3}$ radians in degrees.

a) 8° b) 68° c) 145° d) 480° e) 1508°

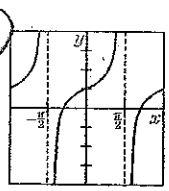
$\frac{8\pi}{3} \cdot \frac{180}{\pi} = 480°$

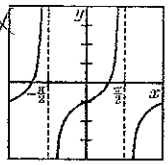
30. Convert 108° to radians. Express your answer in terms of π.

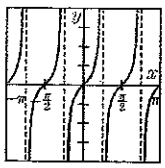
a) $\frac{2\pi}{5}$ $\boxed{\text{b) } \frac{3\pi}{5}}$ c) $\frac{5\pi}{6}$ d) $\frac{6\pi}{5}$ e) $\frac{5\pi}{3}$

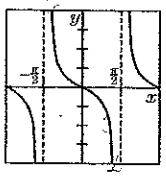
$108° \frac{\pi}{180°} = \frac{54\pi}{90} = \frac{27\pi}{45} = \frac{3\pi}{5}$

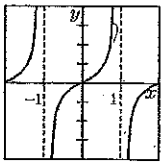
31. Which graph shows $y = \tan x + 1$?

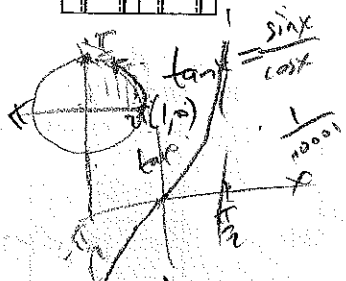
a) 

b) 

c) 

d) 

e) 



32. State the period of the function defined by $y = \tan\left(\frac{\pi}{2}x\right)$.

a) 1 b) 2 c) $\frac{\pi}{2}$ d) π e) 2π

$0 < \frac{\pi}{2}x < \pi$ tan, not sin or cos

$0 < \pi x < 2\pi$

$0 < x < 2$

$0 \le \frac{\pi}{2}x \le \pi$

$0 \le \pi x \le 2\pi$

$0 \le x \le 2$

33. What is the period of the function $f(x) = 2\sin\frac{1}{2}x$?

a) $\frac{1}{2}$ b) 2 c) π d) 2π e) 4π

$0 < \frac{1}{2}x < 2\pi$

$0 < x < 4\pi$

$0 \le \frac{1}{2}x \le 2\pi$

$0 \le x \le 4\pi$

34. Which of the following equations describes the graph shown?

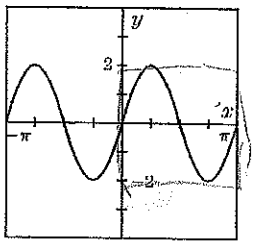
a) $y = 2\sin\frac{\theta}{2}$

b) $y = \frac{1}{2}\sin\theta$

c) $y = \sin\theta$

d) $y = 2\sin 2\theta$

e) $y = \sin\frac{\theta}{2}$



$2\sin 2\theta$

Per $= \pi$

$0 \le x \le \pi$

$0 \le 2x \le 2\pi$

35. Which of the following is an equation having an amplitude of 3 and a period of 4?

a) $y = -3\cos(4\pi x)$

b) $y = -3\cos\frac{\pi x}{2}$

c) $y = 3\cos 2x$

d) $y = 3\cos\frac{\pi x}{4}$

e) $y = 3\cos\frac{3\pi x}{4}$

$\pm 3\cos\frac{\pi}{2}x$

$0 < x < 4$

$0 < \frac{1}{2}x < 2$

$0 < \frac{\pi}{2}x < 2\pi$

36. a) The line $x + y = 4$ intersects the parabola $y = x^2 + 2$ at points **A** and **B**. Determine the coordinates of **A** and **B**. $(-2,6)$ $(1,3)$

b) If **C** is the vertex of the given parabola, determine the area of $\triangle$**ABC**. $y - 2 = x^2$ $(0,2) = C$

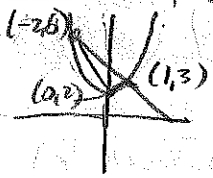
$x + x^2 + 2 = 4$

$x^2 + x - 2 = 0$

$(x+2)(x-1) = 0$

$x = -2, \; x = 1$

$y = 6 \quad y = 3$



you can show it is a right triangle by slopes, and use 45-45 $\triangle$ to get base & height

$A = \frac{1}{2}(\sqrt{2})(3\sqrt{2}) = 3$

37. Simplify: $\frac{d}{c^2 + cd} - \frac{2d}{c^2 - d^2}$

a) $\frac{-d}{c^2 - cd}$ b) $\frac{-d}{c(c^2 - d^2)}$ c) $\frac{d}{c(c+d)}$

d) $\frac{-d}{d(c-d)}$ e) $\frac{d}{d(c+d)}$

$\frac{d}{c(c+d)} - \frac{2d}{(c+d)(c-d)}$

$\frac{d(c-d)}{c(c+d)(c-d)} - \frac{2cd}{c(c+d)(c-d)} = \frac{d(c-d) - 2cd}{c(c+d)(c-d)}$

$= \frac{dc - d^2 - 2cd}{c(c+d)(c-d)} = \frac{-d^2 - cd}{c(c+d)(c-d)}$

$= \frac{-d(d+c)}{c(c+d)(c-d)} = \frac{-d}{c(c-d)} = \frac{-d}{c^2 - cd}$

38. Simplify: $\frac{x+4}{x-2} - \frac{11x+2}{x^2-4}$

a) $\frac{x-3}{x+2}$ b) $\frac{x^2 - 5x + 8}{(x+2)(x-2)}$

c) $\frac{x+2}{x-2}$ d) $x+2$

e) $-\frac{1}{4}$

$\frac{(x+4)}{(x-2)}\frac{(x+2)}{(x+2)} - \frac{11x+2}{(x+2)(x-2)} = \frac{x^2 + 6x + 8 - 11x - 2}{(x+2)(x-2)}$

$= \frac{x^2 - 5x + 6}{(x+2)(x-2)}$

$= \frac{(x-3)(x-2)}{(x+2)(x-2)}$

39. If $\cos\theta > 0$ and $\tan\theta > 0$ then in which quadrant does θ terminate?

a) 1 b) 2 c) 3 d) 4
e) not enough information

40. If $\cos\theta > 0$ and $\tan\theta < 0$ then in which quadrant does θ terminate?

a) 1 b) 2 c) 3 d) 4
e) not enough information

41. When $4y - y^2 - 4x + xy$ is factored, one of the factors is $y - 4$. What is the other factor?

a) $4 - y$ b) $x - y$ c) $x(4 - y)$
d) $-y(y - x)$ e) $y - x$

42. When *completely factored* one of the factors of $24x^2 - 4x - 8$ is:

a) $3x + 2$ b) $2x - 1$ c) $x - 2$ d) $3x - 2$
e) this cannot be factored

43. Find the exact value of $\tan 210°$

44. Find the exact value of $\sin\frac{\pi}{2}$

45. Find the exact value of $\sec 225°$

46. Find the exact value of $\csc 120°$

47. Find the exact value of $\sin 330°$

48. Find the exact value of $\cos\frac{3\pi}{2}$

Simplify.

49. $\sin^2\theta + \cos^2\theta + \tan^2\theta$

50. $\dfrac{\tan\theta}{\sec\theta}$

51. $\tan\theta \cdot \csc\theta$

52. $\tan^2\theta\csc^2\theta - \tan^2\beta\csc^2\beta = \sec^2\theta - \sec^2\beta$

53. $\tan^2\theta + \tan^4\theta = \sec^4\theta - \sec^2\theta$

Evaluate.

54. $\begin{vmatrix} 0 & -2 \\ 4 & -9 \end{vmatrix}$

55. $\begin{vmatrix} x^2 & 9 \\ x & x \end{vmatrix}$

$|A| = \det A$

$ad - bc$

56. Name the 3 trig pythagorean identities

$\sin^2 x + \cos^2 x = 1$

$1 + \cot^2 x = \csc^2 x$

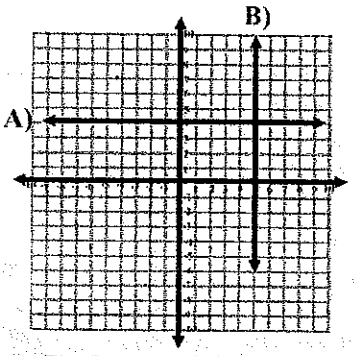
$\tan^2 x + 1 = \sec^2 x$

58. Simplify

$(4a)^{-1}(4a + (2a)^2)$

$\frac{4a + 4a^2}{4a} = \frac{4a}{4a} + \frac{4a^2}{4a} = 1 + a$

57. find the slope of the following lines and equations.



A) 0

B) undefined

c) $3y = -2x + 8$

$y = -\frac{2}{3}x + \frac{8}{3}$ $\quad -\frac{2}{3}$

d) $-4y = -5x + 12$

$y = \frac{5}{4}x - 3$ $\quad \frac{5}{4}$

C) $2x + 3y = 8$

D) $5x - 4y = 12$

59. Find the intersection points and then find the distance between the intersection points for:

$y = x^2$

$y = 2x + 3$

$x^2 = 2x + 3$

$x^2 - 2x - 3 = 0$

$(x-3)(x+1) = 0$

$x = 3 \quad x = -1$

$y = 9 \quad y = 1$

$(3, 9)$

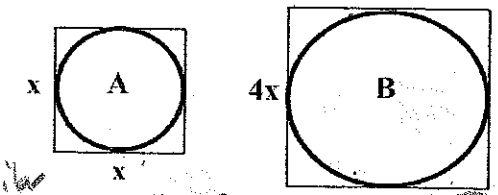
$(-1, 1)$

$d = \sqrt{(3+1)^2 + (9-1)^2}$

$= \sqrt{16 + 64}$

$= \sqrt{80} = \sqrt{4}\sqrt{20} = \sqrt{4}\sqrt{4}\sqrt{5} = 4\sqrt{5}$

60. What is the ratio of the area of circle A to the area of circle B?



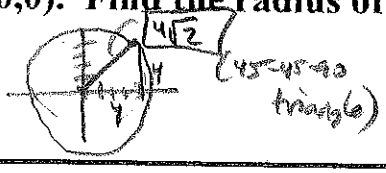
similar

so: $\frac{A_1}{A_2} = \left(\frac{s_1}{s_2}\right)^2 = \left(\frac{1}{4}\right)^2 = \frac{1}{16}$

61. Circle what is positive in each quadrant.

sin cos tan cot sec csc	sin cos tan cot sec csc
sin cos tan cot sec csc	sin cos tan cot sec csc

62. Point (4,4) is on a circle whose center is (0,0). Find the radius of the circle.



63. Find the period of

$2\sin\left(\frac{2}{3}x + \frac{\pi}{9}\right)$

$0 < \frac{2}{3}x + \frac{\pi}{9} < 2\pi$

$-\frac{\pi}{9} < \frac{2}{3}x < 2\pi - \frac{\pi}{9}$

$-\frac{\pi}{3} < 2x < 6\pi - \frac{\pi}{3}$

$-\frac{\pi}{6} < x < 3\pi - \frac{\pi}{6}$

64. Multiply

$(2\sqrt{x} + 3\sqrt{y})(2\sqrt{x} - 3\sqrt{y})$

$2\sqrt{x}\cdot 2\sqrt{x} - 2\sqrt{x}\,3\sqrt{y} + 3\sqrt{y}\cdot 2\sqrt{x} - 3\sqrt{y}\cdot 3\sqrt{y}$

$4\sqrt{x^2} - 6\sqrt{xy} + 6\sqrt{xy} - 9\sqrt{y^2}$

$4x - 9y$

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Answer List

1. b
2. $5\sqrt{3}$ units
3. $\sqrt{206}$
4. $(5,-2)$
5. $(-3,8)$
6. d
7. d
8. b
9. e
10. c
11. b
12. e
13. e
14. c
15. b
16. b
17. a
18. e
19. b
20. c
21. c
22. e
23. c
24. $(6,4)$
25. $-7;\ -4;\ 9n-1;\ 3n;\ 6;\ 6$
26. b
27. a
28. c
29. d
30. b
31. a
32. b
33. e
34. d
35. b
36. $A(1,3),\ B(-2,6);\ 3$
37. a
38. a
39. a
40. d
41. b
42. d
43. $\frac{\sqrt{3}}{3}$
44. 1
45. $-\sqrt{2}$
46. $\frac{2\sqrt{3}}{3}$
47. $-\frac{1}{2}$
48. 0
49. $\sec^2\theta$
50. $\sin\theta$
51. $\sec\theta$
52.
53.
54. 8
55. x^3-9x

56. $\sin^2\theta + \cos^2\theta = 1$
$1 + \tan^2\theta = \sec^2\theta$
$1 + \sec^2\theta = \csc^2\theta$

57. A) 0
B) undefined
C) $\frac{-2}{3}$
D) $\frac{5}{4}$

58) $1 + a$

59) points of intersection are (3,9) and (-1,1)
distance between them is $4\sqrt{5}$

60. $\frac{1}{16}$

61. I - all
II - sin, csc
III - tan, cot
IV - cos, sec

62) $4\sqrt{2}$

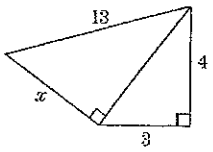
63) 3π

64) $4x - 9y$

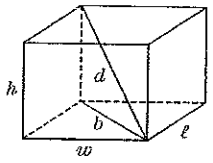
Name _____ Date _____

1. Find the length of side x.

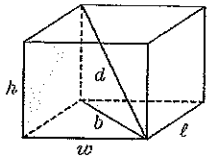
a) 10 b) 12 c) 14
d) 144 e) 194



2. The dimensions of the box shown are as follows: $h = 5$, $w = 5$, and $\ell = 5$. What is the the length of diagonal d?



3. In this diagram of a box, $h = 5$, $w = 9$, and $\ell = 10$. Find d.



4. The point $(5, 2)$ is reflected in the x-axis. What is the image of this point?

5. The point $(3, 8)$ is reflected in the y-axis. What is the image of this point?

6. What is the sum of the solutions of $|3x - 3| = 15$?

a) -10 b) -2 c) 0 d) 2 e) 6

7. Determine the distance between the points $(-2, 3)$ and $(4, 9)$.

a) $\sqrt{142}$ b) $\sqrt{146}$ c) $4\sqrt{3}$ d) $6\sqrt{2}$ e) 12

8. Point **R** lies on the line segment joining $\mathbf{P}(-7, 8)$ and $\mathbf{Q}(5, -4)$. If $\mathbf{PR} = \mathbf{RQ}$, what are the coordinates of **R**?

a) $(-6, 6)$ b) $(-1, 2)$ c) $(1, -2)$
d) $(6, -6)$ e) $(1, 6)$

9. Point $\mathbf{P}(-8, 16)$ and $\mathbf{Q}(6, -8)$ are the endpoints of a line segment **PQ**. Point **M** is the midpoint of segment **PQ** and point **A** is the midpoint of segment **MQ**. What are the coordinates of **A**?

a) $(-2, 4)$ b) $(-1, 4)$ c) $(-\frac{1}{2}, 2)$
d) $(\frac{1}{2}, -2)$ e) $(\frac{5}{2}, -2)$

10. Which of the following best describes the lines $y - 3 = 4x$ and $6 - 2y = 8x$?

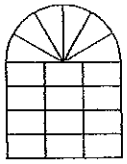
a) coincident b) parallel c) intersecting
d) perpendicular e) skew

11. What is the slope of all lines parallel to the line $3x + 7y = -7$?

a) $-\frac{7}{3}$ b) $-\frac{3}{7}$ c) -1 d) $\frac{3}{7}$ e) $\frac{7}{3}$

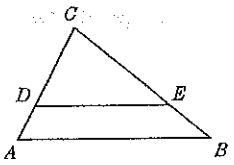
12. A 2-ft wide window consists of a 5 foot by 2 foot rectangle with a semicircle on top as shown in the diagram. Find the total distance around the window. [Use $\pi \approx 3.14$]

a) 24.14 ft b) 20.28 ft c) 18.28 ft
d) 16.28 ft e) 15.14 ft



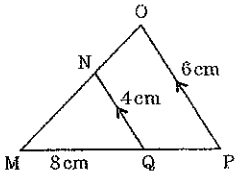
13. In the diagram, **DE** $\parallel$ **AB**, **CA** $= 9$, **DA** $= 3$, and **CE** $= 10$. Find **EB**.

a) 2.5 b) 3 c) 4
d) 4.5 e) 5



14. In the figure, **NQ** is parallel to **OP** and **NQ** $= 4$, **OP** $= 6$, and **MQ** $= 8$. How long is **MP**?

a) 4 b) 10 c) 12
d) 14 e) 16



15. The ratio of chairs to tables at a certain restaurant is 20 to 3. If there are 120 chairs in the restaurant, how many tables are there?

a) 12 b) 18 c) 24 d) 56 e) 120

16. A Mexican restaurant serves tacos, fajitas, and chalupas. If the ratio of tacos to fajitas to chalupas is 7 : 5 : 3 and there were 210 tacos served, how many chalupas were served?

a) 30 b) 90 c) 105 d) 150 e) 210

17. Simplify: $\dfrac{x^2+x-6}{x^2-9} \div \dfrac{x^2-4}{x^2+5x+6}$

a) $\dfrac{x+3}{x-3}$ b) $\dfrac{(x-2)^2}{(x-3)(x+3)}$
c) $\dfrac{x-3}{x+3}$ d) -1
e) 1

18. If $f(x) = 3x - 1$ and $g(x) = 4x + 3$, then $f[g(x)] =$

a) $12x^2 + 5x - 3$ b) $12x^2 + 13x - 3$
c) $7x + 2$ d) $12x - 1$
e) $12x + 8$

19. Find $f^{-1}(x)$ if $f(x) = \dfrac{2}{x} + 1$.

a) $\dfrac{2}{x+1}$ b) $\dfrac{2}{x-1}$ c) $\dfrac{2}{1-x}$
d) $2(x-1)$ e) $x - \dfrac{1}{2}$

20. What is the value of $\dfrac{4^0 + 1^4}{3^{-1}}$?

a) 24 b) 15 c) 6 d) $\frac{5}{3}$ e) $\frac{2}{3}$

21. Solve $3x^2 - 5x - 1 = 0$ using the Quadratic Formula.

a) $\frac{-10 \pm \sqrt{101}}{3}$ b) $\frac{-5 \pm \sqrt{37}}{6}$ c) $\frac{5 \pm \sqrt{37}}{6}$

d) $\frac{10 \pm \sqrt{101}}{9}$ e) $\frac{10 \pm \sqrt{101}}{3}$

22. Solve for x: $16^{x-1} = 8^x$

a) $x = -1$ b) $x = \frac{1}{4}$ c) $x = 1$

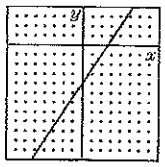
d) $x = \frac{4}{3}$ e) $x = 4$

23. Find $\tan\theta$ if $\cos\theta = \frac{a}{a+2}$.

a) $\frac{2\sqrt{a+1}}{a+2}$ b) $\frac{4(a+1)}{a+2}$ c) $\frac{2\sqrt{a+1}}{a}$

d) $\frac{4(a+1)}{a}$ e) $\frac{\sqrt{a+1}}{2a}$

24. If $x - 2y + 2 = 0$ were graphed on the graph, at what point would it intersect the line shown?



25. If $f(x) = 2x + 1$ and $g(x) = \frac{x-1}{2}$, then find:

a) $f(-4) =$

b) $g(-7) =$

c) $f(5n) - g(2n+5) =$

d) $f[g(3n)] =$

e) $f[g(6)] =$

f) $g[f(6)] =$

26. What is the equation of the parabola that opens down, has a vertex $V(-3, 0)$, and a y-intercept of -36?

a) $y = 4(x+3)^2$ b) $y = -4(x+3)^2$

c) $y = 4(x-3)^2$ d) $y = -4x^2 - 3$

e) $y = -4(x-3)^2$

27. The parabola $y = 5x^2 + 20x + 14$ will have

a) a minimum at $(-2, -6)$

b) a minimum at $(-2, 10)$

c) a minimum at $(10, -86)$

d) a maximum at $(-2, -6)$

e) a maximum at $(-2, 6)$

28. The parabola $y = -x^2 + 4x + 1$ will have

a) a maximum of 2 b) a minimum of 2

c) a maximum of 5 d) a minimum of 5

e) a maximum of -5

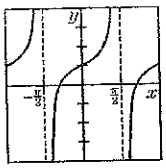
29. Express $\frac{8\pi}{3}$ radians in degrees.

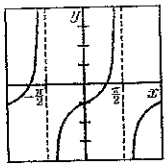
a) $8°$ b) $68°$ c) $145°$ d) $480°$ e) $1508°$

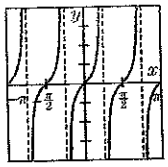
30. Convert $108°$ to radians. Express your answer in terms of π.

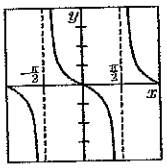
a) $\frac{2\pi}{5}$ b) $\frac{3\pi}{5}$ c) $\frac{5\pi}{6}$ d) $\frac{6\pi}{5}$ e) $\frac{5\pi}{3}$

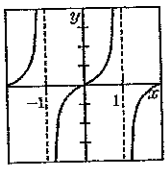
31. Which graph shows $y = \tan x + 1$?

a) 

b) 

c) 

d) 

e) 

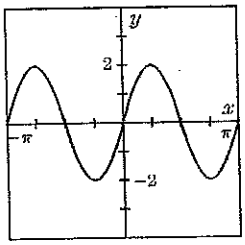
32. State the period of the function defined by $y = \tan\left(\frac{\pi}{2}x\right)$.

a) 1 b) 2 c) $\frac{\pi}{2}$ d) π e) 2π

33. What is the period of the function $f(x) = 2\sin\frac{1}{2}x$?

a) $\frac{1}{2}$ b) 2 c) π d) 2π e) 4π

34. Which of the following equations describes the graph shown?



a) $y = 2\sin\frac{\theta}{2}$

b) $y = \frac{1}{2}\sin\theta$

c) $y = \sin\theta$

d) $y = 2\sin 2\theta$

e) $y = \sin\frac{\theta}{2}$

35. Which of the following is an equation having an amplitude of 3 and a period of 4?

a) $y = -3\cos(4\pi x)$ b) $y = -3\cos\frac{\pi x}{2}$

c) $y = 3\cos 2x$ d) $y = 3\cos\frac{\pi x}{4}$

e) $y = 3\cos\frac{3\pi x}{4}$

36. a) The line $x + y = 4$ intersects the parabola $y = x^2 + 2$ at points **A** and **B**. Determine the coordinates of **A** and **B**.

b) If **C** is the vertex of the given parabola, determine the area of $\triangle$**ABC**.

37. Simplify: $\dfrac{d}{c^2 + cd} - \dfrac{2d}{c^2 - d^2}$

a) $\dfrac{-d}{c^2 - cd}$ b) $\dfrac{-d}{c(c^2 - d^2)}$ c) $\dfrac{d}{c(c+d)}$

d) $\dfrac{-d}{d(c-d)}$ e) $\dfrac{d}{d(c+d)}$

38. Simplify: $\dfrac{x+4}{x-2} - \dfrac{11x+2}{x^2-4}$

a) $\dfrac{x-3}{x+2}$ b) $\dfrac{x^2 - 5x + 8}{(x+2)(x-2)}$

c) $\dfrac{x+2}{x-2}$ d) $x + 2$

e) $-\dfrac{1}{4}$

39. If $\cos\theta > 0$ and $\tan\theta > 0$ then in which quadrant does θ terminate?

a) 1 b) 2 c) 3 d) 4
e) not enough information

40. If $\cos\theta > 0$ and $\tan\theta < 0$ then in which quadrant does θ terminate?

a) 1 b) 2 c) 3 d) 4
e) not enough information

41. When $4y - y^2 - 4x + xy$ is factored, one of the factors is $y - 4$. What is the other factor?

a) $4 - y$ b) $x - y$ c) $x(4 - y)$
d) $-y(y - x)$ e) $y - x$

42. When *completely factored* one of the factors of $24x^2 - 4x - 8$ is:

a) $3x + 2$ b) $2x - 1$ c) $x - 2$ d) $3x - 2$
e) this cannot be factored

43. Find the exact value of $\tan 210°$

44. Find the exact value of $\sin\frac{\pi}{2}$

45. Find the exact value of $\sec 225°$

46. Find the exact value of $\csc 120°$

47. Find the exact value of $\sin 330°$

48. Find the exact value of $\cos\frac{3\pi}{2}$

Simplify.

49. $\sin^2\theta + \cos^2\theta + \tan^2\theta$

50. $\dfrac{\tan\theta}{\sec\theta}$

51. $\tan\theta \cdot \csc\theta$

52. $\tan^2\theta\csc^2\theta - \tan^2\beta\csc^2\beta = \sec^2\theta - \sec^2\beta$

53. $\tan^2\theta + \tan^4\theta = \sec^4\theta - \sec^2\theta$

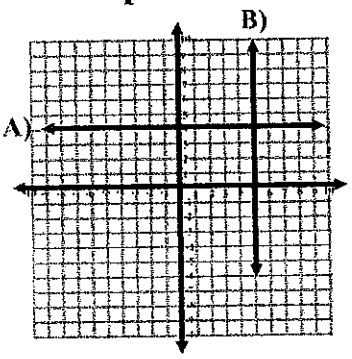
Evaluate.

54. $\begin{vmatrix} 0 & -2 \\ 4 & -9 \end{vmatrix}$

55. $\begin{vmatrix} x^2 & 9 \\ x & x \end{vmatrix}$

56. Name the 3 trig pythagorean identities

57. find the slope of the following lines and equations.



C) $2x + 3y = 8$

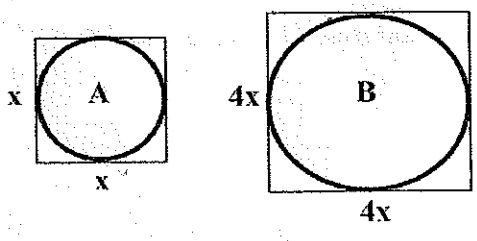
D) $5x - 4y = 12$

58. Simplify
$(4a)^{-1}(4a + (2a)^2)$

59. Find the intersection points and then find the distance between the intersection points for:

$y = x^2$
$y = 2x + 3$

60. What is the ratio of the area of circle A to the area of circle B?



61. Circle what is positive in each quadrant.

sin cos tan cot sec csc	sin cos tan cot sec csc
sin cos tan cot sec csc	sin cos tan cot sec csc

62. Point (4,4) is on a circle whose center is (0,0). Find the radius of the circle.

63. Find the period of
$2\sin\left(\frac{2}{3}x + \frac{\pi}{9}\right)$

64. Multiply
$(2\sqrt{x} + 3\sqrt{y})(2\sqrt{x} - 3\sqrt{y})$

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Answer List

1. b
2. $5\sqrt{3}$ units
3. $\sqrt{206}$
4. $(5,-2)$
5. $(-3,8)$
6. d
7. d
8. b
9. e
10. c
11. b
12. e
13. e
14. c
15. b
16. b
17. a
18. e
19. b
20. c
21. c
22. e
23. c
24. $(6,4)$
25. -7; -4; $9n-1$; $3n$; 6; 6
26. b
27. a
28. c
29. d
30. b
31. a
32. b
33. e
34. d
35. b
36. $A(1,3)$, $B(-2,6)$; 3
37. a
38. a
39. a
40. d
41. b
42. d
43. $\frac{\sqrt{3}}{3}$
44. 1
45. $-\sqrt{2}$
46. $\frac{2\sqrt{3}}{3}$
47. $-\frac{1}{2}$
48. 0
49. $\sec^2\theta$
50. $\sin\theta$
51. $\sec\theta$
52.
53.
54. 8
55. x^3-9x

56. $\sin^2\theta + \cos^2\theta = 1$
$1 + \tan^2\theta = \sec^2\theta$
$1 + \sec^2\theta = \csc^2\theta$

57. A) 0
B) undefined
C) $\frac{-2}{3}$
D) $\frac{5}{4}$

58) 1 + a

59) points of intersection are (3,9) and (-1,1)
distance between them is $4\sqrt{5}$

60. $\frac{1}{16}$

61. I - all
II - sin, csc
III - tan, cot
IV - cos, sec

62) $4\sqrt{2}$

63) 3π

64) 4x - 9y