

7.7 Worksheet

Use the table section "forms involving $a+bu$ " to find the indefinite integral.

1. $\int \frac{x^2}{x+5} dx$

2. $\int \frac{2}{x^2(4+3x)^2} dx$

Use the table section "forms involving $\sqrt{a^2 - u^2}$ " to find the indefinite integral.

3. $\int \frac{1}{x^2\sqrt{1-x^2}} dx$

4. $\int \frac{\sqrt{64-x^4}}{x} dx$

Use the table section "trigonometric forms" to find the indefinite integral.

5. $\int \cos^4(3x) dx$

6. $\int \frac{\sin^4 \sqrt{x}}{\sqrt{x}} dx$

7. $\int \frac{1}{\sqrt{x}(1-\cos \sqrt{x})} dx$

8. $\int \frac{1}{1+\cot(4x)} dx$

Use the table section “exponential and logarithmic forms” to find the indefinite integral.

9. $\int \frac{1}{1+e^{2x}} dx$

10. $\int e^{-4x} \sin(3x) dx$

11. $\int x^7 \ln x dx$

12. $\int (\ln x)^3 dx$

Use the integral tables to find the indefinite integral.

13. $\int x^2 \sqrt{2 + 9x^2} dx$

14. $\int \frac{1}{x^2 \sqrt{x^2 - 4}} dx$

15. $\int \cot^4 x dx$

16. $\int \frac{x}{1 - \sec^2 x} dx$

7.8 Worksheet

Decide whether the integral is improper or not. Explain your reasoning.

1. $\int_0^1 \frac{dx}{5x-3}$

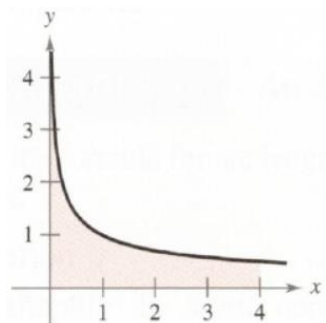
2. $\int_1^5 \frac{dx}{2x-3}$

3. $\int_0^1 \frac{2x-5}{x^2-5x+6} dx$

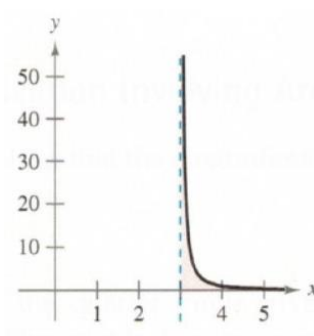
4. $\int_{-\infty}^{\infty} \frac{\sin x}{4+x^2} dx$

Explain why the integral is improper and determine if it converges or diverges.

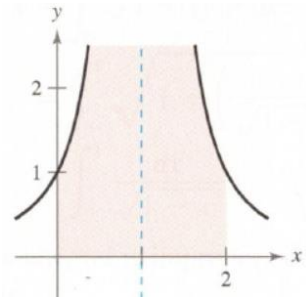
5. $\int_0^4 \frac{1}{\sqrt{x}} dx$



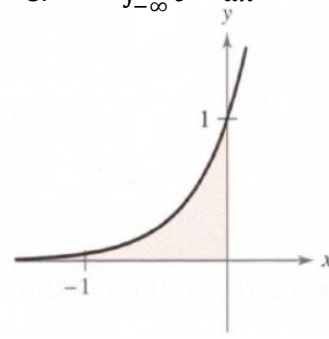
6. $\int_3^4 \frac{1}{(x-3)^{3/2}} dx$



7. $\int_0^2 \frac{1}{(x-1)^2} dx$



8. $\int_{-\infty}^0 e^{3x} dx$



Determine whether the improper integral converges or diverges. Evaluate it if it converges.

9. $\int_1^{\infty} \frac{1}{x^3} dx$

10. $\int_1^{\infty} \frac{6}{x^4} dx$

11. $\int_1^{\infty} \frac{3}{\sqrt[3]{x}} dx$

12. $\int_0^{\infty} e^{x/3} dx$

7.7 – 7.8 Review

Use the Table of Integrals to evaluate each of the following:

#1. $\int e^{6x} \cos(2x) dx$

#2. $\int \sqrt{16-9x^2} dx$

#3. $\int xe^{4x} dx$

#4. $\int xe^{3x^2} \cos(3x^2) dx$

#5. $\int t^2 \sec^4(t^3) dt$

#6. $\int x\sqrt{9x^4 + 25} dx$

#7. $\int \sin^4(5t) dt$

#8. $\int x^3 \ln x dx$

#9. $\int \sin(3x)\cos(4x) dx$

#10. $\int x\sqrt{x^4 - 4} dx$

#11. $\int x \tan^3(5x^2) dx$

#12. $\int \frac{\sqrt{2+9x^2}}{x^2} dx$

Determine whether the improper integral is convergent or divergent. If it converges, evaluate it.

#13. $\int_3^{\infty} \frac{1}{x(\ln x)^5} dx$

#14. $\int_4^{\infty} \frac{x}{x^{7/2}} dx$

#15. $\int_0^5 \frac{1}{(x-1)^{1/5}} dx$

#16. $\int_3^{\infty} x \ln(x^2) dx$

#17. $\int_0^{\infty} \frac{x^2}{(1-x^3)^2} dx$