

AP Calculus BC

Review for Unit 6 Test, Part 1

For #1-4, find the area bounded by the given curves. **Sketch and setup the integral, but do not evaluate the integral.**

#1) $y = x^3$, $y = x^2 - 4x + 4$, $x = 2$

#2) $x - 2y + 7 = 0$, $y^2 - 6y - x = 0$

#3) $y = e^{-x^2}$, $y = 1 - \cos x$, $x = 0$

#4) $y = 2^x$, $y = 8$, $x = 0$

For #5-8, use the **disk** method to find the volume generated by rotating the region bounded by the given curves about the specified axis. **Sketch and setup the integral, but do not evaluate the integral.**

#5) $y = x^2$, $y = 4$, $x = 0$; *about the x -axis*

#6) $y = e^{-2x}$, $y = 1 + x$, $x = 1$, *about the x -axis*

#7) $y = x^3$, $y = 8$, $x = 0$, *about the y -axis*

#8) $y = x^3$, $y = 8$, $x = 0$, *about $x = 2$*

For #9-14, use the **shell** method to find the volume generated by rotating the region bounded by the given curves about the specified axis. **Sketch and setup the integral, but do not evaluate the integral.**

#9) $y = x^2$, $y = 0$, $x = -2$, $x = -1$; *about the y -axis*

#10) $y = x^2$, $y = 0$, $x = 1$, $x = 4$; *about $x = 4$*

#11) $y = x^3$, $y = x^2$, *about $y = 1$*

#12) $x + 3 = 4y - y^2$, $x = 0$, *about the x -axis*

#13) $y = x^3$, $y = 8$, $x = 0$, *about the y -axis*

#14) $y = \cos x$, $y = 0$, $x = \frac{3\pi}{2}$, $x = \frac{5\pi}{2}$; *about the y -axis*