

Calc 2 Bonus Review Test #1

Find the volume of the solid generated by revolving the region bounded by the given lines and curves about the x -axis.

1. $y = \sqrt{x}$, $y = 0$, $x = 0$, $x = 7$

2. $y = \frac{1}{x}$, $y = 0$, $x = 1$, $x = 2$

3. $y = x^2$, $y = 16$, $x = 0$

4. $y = 6x$, $y = 6$, $x = 0$

Find the volume of the solid generated by revolving the region about the given line.

5. The region bounded above by the line $y = 9$, below by the curve $y = 9 - x^2$, and on the right by the line $x = 3$, about the line $y = 9$

Use the shell method to find the volume of the solid generated by revolving the region bounded by the given curves about the given lines.

6. $y = 9 - x^2$, $y = 9$, $x = 3$; revolve about the line $y = 9$

Find the length of the curve.

7. $y = 4x^{3/2}$ from $x = 0$ to $x = \frac{5}{16}$

Find the derivative of y with respect to x , t , or θ , as appropriate.

8. $y = \ln(\ln 6x)$

9. $y = \ln \frac{1-x}{(x+3)^3}$

Find the derivative of y with respect to x , t , or θ , as appropriate.

10. $y = 9xe^x - 9e^x$

Evaluate the integral.

11. $\int_2^3 \frac{x^4 + 1}{x^5 + 5x} dx$

12. $\int \frac{\cos x dx}{1 + 3 \sin x}$

Find the derivative of y with respect to x .

13. $y = -\sin^{-1}(7x^2 + 2)$

Evaluate the integral.

14. $\int \frac{8 - 4x}{\sqrt{49 - 64x^2}} dx$

15. $\int \frac{dx}{2\sqrt{x}(1+x)}$

16. $\int \frac{dt}{t^2 + 10t + 29}$

Answer Key

Testname: TEST #1 BONUS REVIEW

1. $\frac{49}{2}\pi$

2. $\frac{1}{2}\pi$

3. $\frac{4096}{5}\pi$

4. 24π

5. $\frac{243}{5}\pi$

6. $\frac{243}{5}\pi$

7. $\frac{335}{432}$

8. $\frac{1}{x \ln 6x}$

9. $\frac{2x - 6}{(x + 3)(1 - x)}$

10. $9xe^x$

11. $\frac{1}{5} \ln \left| \frac{43}{7} \right|$

12. $\frac{1}{3} \ln | 1 + 3 \sin x | + C$

13. $\frac{-14x}{\sqrt{1 - (7x^2 + 2)^2}}$

14. $\sin^{-1} \left(\frac{8}{7}x \right) + \frac{1}{16} \sqrt{49 - 64x^2} + C$

15. $\tan^{-1} \sqrt{x} + C$

16. $\frac{1}{2} \tan^{-1} \left(\frac{t+5}{2} \right) + C$