

Chapter 4 Review #2 (Sections 4.1, 4.2, 4.4, and 5.6)

In 1-11, Find dy/dx for each:

1. $y = e^{\cos x} + e^{\ln x}$

2. $y = 8^{\sec x}$

3. $y = 4\sin^5(5 - 2x)$

4. $y = \sqrt{1 - \tan 3x}$

5. $y = \ln(\sec x)$

6. $y = \csc\left(\frac{3}{x^2}\right)$

7. $y = \log_6(3 - x^2)$

8. $y = 5^{-x}$

9. $y = x^2 e^{-x}$

10. $y = \ln\sqrt{\cos x}$

11. $y = \left(\frac{x-3}{2x+1}\right)^3$

12. Find $\frac{dy}{dx}$ if $x^2y + 3y^2 = x$

13. Find $y'''(x)$ if $y = (4x + 1)^7$

14. A container has the shape of an open right circular cone. The height of the container is 10 cm and the diameter of the opening is 10 cm. Water in the container is evaporating so that its depth h is changing at the constant rate of $-3/10$ cm/hr. Find the rate of change of the volume of water in the container, with respect to time, when $h = 5$ cm. Indicate units of measure.

15. A 14 ft ladder is leaning against a wall. If the top of the ladder slips down the wall at a rate of 2 ft/s, how fast will the end be moving away from the wall when the top is 6 ft above the ground?

Review from the book:

Page 168; #50, Page 186; 39, 45, 47, 66 a-d, 79