Chapter 3 Retake Worksheet

Evaluate.

1. $\lim_{x\to 0} \frac{e^x - e^{-x}}{x}$

2. $\lim_{x\to 0} \frac{e^x - 1}{x}$

Differentiate each function with respect to x.

3. $y = \log_3 3x^2$

4. $y = 3^{(x^4+1)}$

5. $y = lnx^3$

6. $y = e^{(4x^3+5)^2}$

Use Logarithmic differentiation to differentiate with respect to x.

7. $y = (x^5 + 5)^2\sqrt{2x^3 + 3}$

Chapter 3 Retake Worksheet

Use implicit differentiation to find $\frac{dy}{dx}$.

8. $5x^3 + xy^2 = 5x^3y^3$

9. A spherical balloon is inflated so that its radius increases at a rate of $\frac{2}{r}$ cm/sec. How fast is the volume of the balloon increasing when the radius is 4 cm?

10. An observer stands 700 ft away from a launch pad to observe a rocket launch. The rocket blasts off and maintains a velocity of 900 ft/sec. Assume the scenario can be modeled as a right triangle. How fast is the observer to rocket distance changing when the rocket is 2400 ft from the ground?