
SECTIONS 2.5 AND 2.6

Problem 1. Find the derivatives of the following functions:

a. $y = e^{2x}$

b. $y = \ln(2x^2 - 3x + 1)$

c. $y = 5^{x^3 - 12x^2}$

d. $y = x^3 8^{4x} - 3x^{-1/3}$



Problem 2. Let $f(x) = \log_9 \left(\frac{x^2(x^2 + 5)^4}{(x^3 - 4)^9} \right)$.

a. Use the properties of logarithms to rewrite $f(x)$ in terms of simpler logarithms.

b. Find $f'(x)$.

Problem 3. Determine where the following functions have a horizontal tangent line.

a. $y = 4^{3x^2 - 24x}$

b. $y = (-12x - 21)e^{4x+5}$



Problem 4. Find $\frac{dy}{dx}$ for the following.

a. $8x^{1/3} + 5y^{2/3} = 33$

b. $9x^2y^2 - 5x^2 = 0$

c. $y6^x + x9^y = 3y$



Problem 5. Find $\frac{dy}{dx}$ at $(-8, 1)$ if $xy = \frac{24^y}{x+5}$.

Problem 6. A corporation has a continuous compounded bank account with 2.5% annual interest. The board of directors has placed \$84,936 in the account when it is opened. At what rate is the account growing after 5 years? Round your answer to the nearest cent.