Derivatives of Exponential Functions

1. Find the derivative of the function
(Similar to p.273 #1-16)

$$y = e^{3x-1}$$

2. Find the derivative of the function
(Similar to p.273 #1-16)

$$y = e^{\sqrt[3]{x}}$$

3. Find the derivative of the function
(Similar to p.273 #1-16)

$$y = x^2 e^{9x-1}$$

4. Find the derivative of the function
(Similar to p.273 #1-16)

$$y = \frac{\left(e^{x} + e^{-2x}\right)^5}{3}$$

5. Find the derivative of the function
(Similar to p.273 #1-16)

$$y = \frac{e^{4x} - 2}{e^{4x} + 5}$$

6. Find the slope of the tangent line to the exponential function at the point (0, 1)
(Similar to p.273 #17-20)

$$y = e^{x/3}$$

7. Find an equation of the tangent line to the graph of the function at the given point
(Similar to p.273 #21-26)

$$y = e^{3x-1}, \quad \left(0, \frac{1}{e}\right)$$

8. Find dy/dx implicitly
(Similar to p.273 #27-30) NEXT TIME

$$e^{3xy} + 7x^3 - 2y = 5$$

9. Find the second derivative
(Similar to p.273 #31-34)

$$f(x) = (5 + 3x)e^{-4x}$$

10. Analyze and sketch the graph of the function. Label any relative extrema, points of inflection, and asymptotes
(Similar to p.273 #35-38)

$$f(x) = x^3 e^{-x}$$

11. Solve the equation for x
(Similar to p.273 #39-42)

$$e^{4x-1} = e^2$$