1. Solve for t to two decimal places.

    $$2 = e^{0.45t}$$

    $t \approx \boxed{}$

    (Do not round until the final answer. Then round to the nearest hundredth as needed.)

2. At what nominal rate compounded continuously must money be invested to double in 2 years?

    A rate of $\boxed{}$ % is required for money to double in 2 years.

    (Do not round until the final answer. Then round to the nearest tenth.)

3. Differentiate the following function.

    $$f(x) = -10 - 5x + 8\,e^{x}$$

    $f\,'(x) = \boxed{}$

4. Find the equation of the line tangent to the graph of f at the indicated value of x.

    $$f(x) = 4 + 7\ln x; \quad x = 1$$

    $y = \boxed{}$ (Type your answer in slope-intercept form.)

5. First use the appropriate properties of logarithms to rewrite f(x), and then find f '(x).

    $$f(x) = 7x + \ln 7x$$

    Rewrite f(x) using properties of logarithms.

    $f(x) = \boxed{}$ (Do not simplify.)

    Find f '(x).

    $f\,'(x) = \boxed{}$ (Simplify your answer.)

6. Find $\dfrac{dy}{dx}$ for the indicated function y.

$$y = 4^x + e^4$$

$\dfrac{dy}{dx} = \square$ (Simplify your answer. Do not evaluate.)

7. Use the product rule to find the derivative.

$$y = (3x^2 + 4)(2x - 5)$$

$y' = \square$

8. Use the quotient rule to find the derivative of the following.

$$y = \dfrac{2x^2 + 1}{x^2 + 8}$$

$y' = \square$

9. Find $f'(x)$ and find the value(s) of x where $f'(x) = 0$.

$$f(x) = \dfrac{x}{x^2 + 225}$$

$f'(x) = \square$

Find the value(s) of x where $f'(x) = 0$.

$x = \square$ (Simplify your answer. Use a comma to separate answers as needed.)

10. Find the indicated derivative and simplify.

$$\dfrac{dy}{dx} \text{ for } y = 64x^{\frac{1}{8}}(x^8 + 7)$$

$\dfrac{dy}{dx} = \square$

1.   1.54

2.   34.7

3. $-5 + 8\,e^{x}$

4. $7x - 3$

5. $7x + \mathbf{ln}\ 7 + \mathbf{ln}\ x$

   $7 + \dfrac{1}{x}$

6. $4^{x}\,\mathbf{ln}\ 4$

7. $18x^2 - 30x + 8$

8. $\dfrac{30x}{(x^2 + 8)^2}$

9. $\dfrac{225 - x^2}{(x^2 + 225)^2}$

   $15, -15$

10. $\dfrac{520x^8 + 56}{x^{\frac{7}{8}}}$