

Name: _____

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- There are 12 points possible on this proficiency: one point per problem with no partial credit.
- You have 60 minutes to complete this proficiency.
- No aids (book, calculator, etc.) are permitted.
- You do **not** need to simplify your expressions.
- Your final answers should start with $f'(x) =$, $dy/dx =$ or something similar.
- Box your final answer.

1. $f(t) = e^t(4 - t^3)$

2. $r(\theta) = \tan(\sqrt{3} + \theta^5)$

3. $f(x) = \frac{5}{\cos x}$

$$4. f(r) = \frac{r^4 + \sqrt{r} - 9}{r}$$

$$5. G(x) = \left(\frac{x - \ln(4)}{2}\right)^3 + x\sqrt{x+1}$$

$$6. g(z) = (6 - z)(z^2 + 3)$$

7. $f(y) = \pi + \cos(y^e)$

8. $y = x^{1/4}e^{-x} \sin(x)$

9. $f(x) = \frac{2 \sec(ax)}{3x^3}$ (where a is a constant)

10. $y(t) = \ln(3t + \sin(t^2))$

11. $g(x) = \arctan(e^{2x})$

12. Compute $\frac{dy}{dt}$ if $\ln y - 5t = t^2y$. You must solve for $\frac{dy}{dt}$.