

Name: _____

_____ / 12

- There are 12 points possible on this proficiency: **One point per problem. No partial credit.**
- A passing score is 10/12.
- You have 30 minutes to complete this proficiency.
- No aids (book, calculator, etc.) are permitted.
- You do **not** need to simplify your expressions.
- Your final answers **must start with** $f'(x) =$, $dy/dx =$, or similar.
- Circle your final answer.

Compute the derivatives of the following functions.

1. $f(x) = \sqrt{x} + \sqrt{6} - \frac{e^x}{3}$

2. $f(t) = \frac{1 + 5t - t^{4/3}}{t}$

3. $y = x^2 \sec(x)$

4. $y = e^{-ax} \cos(bx)$, where a and b are fixed constants

5. $f(x) = \arctan(\sin(5x))$

6. $f(x) = \frac{\cos(x)}{\sin(x)}$

7. $y = \frac{xe^x}{1-x}$

8. $y = \tan(x + \sqrt{x})$

9. $f(x) = \sqrt{x} \ln(x) \sin(\pi x)$

10. $f(x) = x + \sqrt{x^2 + 1}$

11. $g(t) = \frac{\ln 3}{1 - t^2}$

12. Compute dy/dx if $2xy^2 - x^3 + y^5 = 0$. You must solve for dy/dx .