Name: ―――――――――――――――――――   ――――――― / 12

Instructor: Bueler ⎮ Jurkowski ⎮ Maxwell

- There are 12 points possible on this proficiency: **One point per problem. No partial credit.**

- A passing score is 10/12.

- 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 **must start with** $f'(x) =$, $dy/dx =$, or similar.

- Circle your final answer.

Compute the derivatives of the following functions.

1. $g(t) = \dfrac{3\sin(t)}{\cos(t)}$

2. $f(x) = (\sec x + e^x)(x^2 - 5)$

3. $f(x) = \dfrac{\pi^2}{x^3 - 4}$

4. $y = e^{4x} \tan(x)$

5. $f(x) = ax^b \cos(\pi x) \ln(x),$ where a and b are fixed constants.

6. $g(w) = \dfrac{2w^2 - w^{5/4} + 3w}{w}$

7. $f(x) = \dfrac{1 - 2x^4}{x^2 - \sqrt{6}}$

8. $r(\theta) = \sqrt{\sin(\theta)}$

9. $y = e^{\arctan(4x)}$

10. $f(x) = \dfrac{x}{\ln(2)} + \dfrac{4}{x}$

11. $g(x) = \ln(\sqrt{x} + \ln(x))$

12. Compute dy/dx if $\quad x^2 e^x + y\ln(x) = e^y$. $\quad$ You must solve for dy/dx.