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. $f(x) = \pi x^2 - \dfrac{x-\sqrt{5}}{9}$

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

3. $y = \tan(1+x^4)$

4. $g(r) = \dfrac{\cos(r)}{1-r^2}$

5. $h(w) = \arctan(\sin(2w-9))$

6. $f(t) = \sec(te^t)$

7. $f(r) = \ln(1 + r^k)$ where k is a fixed constant.

8. $y = (1 + x^2)e^{\sin(\pi x)}$

9. $y = \sqrt{x}\ln(x)\arcsin(x)$

10. $f(x) = \cos(x)\sin(1-2x^3)$

11. $h(w) = \dfrac{1}{\sin(w)}$

12. Compute dy/dx if $\quad x\sin(y) + 3xy^2 = e^x$. You must solve for dy/dx.