Name: _____

- There are 12 points possible on this proficiency, one point per problem. **No partial credit will be given.**
- A passing score is 10/12.
- You have 1 hour 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 or box your final answer.**

1. [12 points] Compute the derivatives of the following functions.

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

b. $y = x\sec(x)$

c. $f(x) = \tan^3(4x)$

d. $f(x) = \tan^{-1}(x^2)$

e. $f(x) = (\sin(x) + x^{-2.3})^5$

f. $f(x) = \dfrac{3}{\sin(x)}$

g. $y = e^{-x}\cos\left(\frac{x}{2}\right)$

h. $y = \ln\left(\sqrt{x^6 - x}\right)$

i. $f(x) = \frac{e^x}{(x^2+2)^3}$

j. $f(x) = \tan\left(x^2 - e^{4x}\right)$

k. $f(x) = \dfrac{x + 2\sin(x)}{\sin(8)}$

l. Find $\dfrac{dy}{dx}$ for $x^3 - y^4 = ye^x$. You must solve for $\dfrac{dy}{dx}$.