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 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 or box your final answer.**

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

a. $f(x) = e^{(3-x^4)}$

b. $f(x) = \dfrac{\sin x}{x^2}$

c. $f(x) = \ln(\sec x + \tan x)$

d. $f(x) = \dfrac{x^3}{4} + \dfrac{2}{\sqrt{x}} + \sqrt{50}$

e. $f(x) = \log_b(x^2 \sin x)$ (where $b > 1$)

f. $f(x) = (e^x + \cos(2x))^{5/4}$

g. $y = \pi\left(\dfrac{x+2}{2}\right)^3$

h. $f(x) = \arctan(\sqrt{x})$

i. $f(x) = \dfrac{8+x^2}{x\cos(\pi)}$

j. $f(x) = x\ln(5+\frac{x}{5})$

k. $f(x) = e^{-x} + e^2 + x^{0.8}$

l. Find $\frac{dy}{dx}$ for $x^2 + y^2 = 25 + 2xy^2$. You must solve for $\frac{dy}{dx}$.