Name: _____ _____ / **12**

- There are 12 points possible on this proficiency: one point per problem with no partial credit.
- 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 should start with $f'(x) =$, $dy/dx =$ or something similar.
- Box your final answer.

1. $j(x) = \left(x^4\right)\sec(x)$

2. $P(\theta) = \sin(3\theta^5 - 2\theta + 1)$

3. $k(t) = \dfrac{1}{\sqrt[3]{3t}} + \left(\dfrac{t-8}{7}\right)^3$

4. $f(x) = \dfrac{x^{1/5}}{\sqrt{2}} + 6e^x + \pi^2$

5. $f(t) = \sqrt{t + \tan(\pi t)}$

6. $G(x) = \dfrac{x^5 - x^{\frac{3}{2}} + 7}{\sqrt{x}}$

7. $h(z) = z\ln(cz) + c^2$ (where c is a constant)

8. $f(v) = \arcsin(\sqrt{v})$

9. $f(x) = (2x+1)\tan(x)\ln(7x)$

10. $F(x) = \dfrac{8}{\tan(x)}$

11. $g(t) = \dfrac{1+e^t}{1+e^{-9t}}$

12. Compute $\frac{dy}{dx}$ if $\cos(x^2+y^2) = 5xy$. You must solve for $\frac{dy}{dx}$.