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. $P(\theta) = \cos(3\theta^4 - 3\theta + 1)$

2. $k(t) = \dfrac{1}{\sqrt[3]{3t}} + \left(\dfrac{t-8}{6}\right)^4$

3. $j(x) = \left(x^3\right)\sec(x)$

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

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

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

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

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

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

10. $F(x) = \dfrac{9}{\sin(x)}$

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 $\frac{dy}{dx}$.