

Name: _____ / 25

There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. **Show all work for full credit.**

1. [15 points] Find the derivative of each function below. You do not need to simplify your answer.

a. $F(x) = \sqrt{1+x^4}$

b. $f(x) = 3 \csc(x)$

c. $G(x) = \frac{1}{\sin^2(x) + \cos^2(x)}$

d. $g(\theta) = \tan(\theta^2 + 1)$

e. $h(x) = \sec(x) + (\cot(x))^2$

2. [6 points] Find $\frac{d^3y}{dx^3}$ for $y = x^2 + 5 \sin(x)$.

3. [4 points] Determine where the graph of $f(x) = \frac{4}{x^2+2x}$ has a horizontal tangent.