

Name: _____ / 25

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

1. [12 points] Find the derivative of each function. You do not need to simplify your answers.

a. $y = 5 \cot(3x^2)$

b. $f(\theta) = \sqrt{\tan\left(\frac{\pi}{4}\right) - \cos(\theta)}$

c. $g(\alpha) = \frac{\tan(\alpha) \csc(\alpha)}{\sec(\alpha)}$

d. $h(x) = \sin^5(x^2 - 3x + 8)$

2. [5 points] Find all x -values where the graph of $f(x) = (x^2 - 8x)^4$ has a horizontal tangent line.

3. [8 points] Find $f'''(x)$ if $f(x) = 3x \sin(2x + 5)$.