Name: _____ **_____ / 25**

Circle one: Rhodes (F01) | Bueler (F02)

25 points possible. No aids (book, calculator, etc.) are permitted. You need not simplify, but show all work and use proper notation for full credit.

1. [15 points] Differentiate the following. Use proper notation to indicate your answer.

a. $f(t) = \sqrt{5 + \sin x}$

b. $f(x) = e^{x \tan x}$

c. $g(x) = \sec^2(3x)$

d. $y = x2^x$

e. $f(\theta) = \theta e^{\theta} \cos\theta$

2. [4 points] An object is at position $s(t) = \sqrt{t^2 - 6t + 11}$ meters at time $t \geq 0$ seconds. When, if ever, is its instantaneous velocity 0?

3. [6 points] Find an equation of the tangent line to the curve $y = \dfrac{2}{(1+\sin x)^3}$ at the point where $x = \pi$.