

Quiz Two

Math 101 - 142

Name: _____

ID: _____

Section: _____

Serial #: _____

1. Find the slope of the tangent line to the function $f(x)$ at the point $x = 3$.

$$f(x) = \frac{1 + x^2}{3x^2 + 2}.$$

2. If $g(t) = 3^t$ and $g'(0) = \ln(3)$, what is the slope of $g(t)$ when $t = 2$?

3. If $f(x) = x^3 + 6x^2 + \sqrt{x}$ and $g(x) = \sqrt[3]{x} - 7$, what is the value of $(fg)'$ at $x = 1$?

4. If $s(t) = t^2 + 2t - 1$ is the position function of an object moving in a straight line, when does the object change its direction of travel? (hint: What is the velocity of the object when it is changing its direction?)