Quiz 5

MAT 201, SPRING 2017

NAME:

Find the derivative for each of the following functions. Apply the theorems from class instead of beginning with the definition.

1. (4 points) $f(x) = 3x^3 - 5x^2 + 10x - 3$

$$f'(x) = 9x^2 - 10x + 10$$

2. (4 points) $g(x) = -5$

$$g'(x) = 0$$

3. (4 points) $y = 6e^x - 12\sqrt{x}$

$$\frac{dy}{dx} = \frac{d}{dx}\left(6e^x - 12\sqrt{x}\right)$$

$$= 6\frac{d}{dx}(e^x) - 12\frac{d}{dx}(\sqrt{x})$$

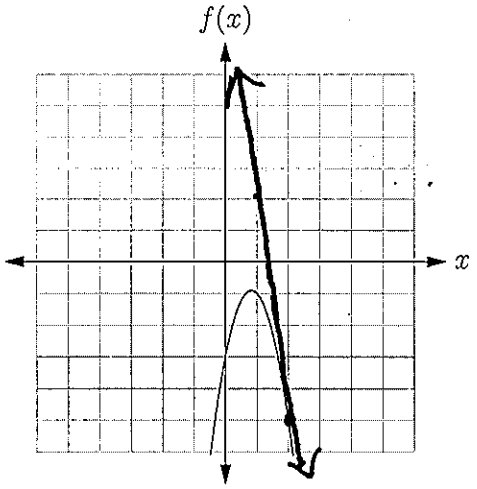
$$= 6e^x - 12\left(\frac{1}{2\sqrt{x}}\right)$$

$$= 6e^x - \frac{6}{\sqrt{x}}$$

4. The graph below shows the funtion

$$f(t) = -3t^2 + 5t - 3.$$

Find the equation for the tangent line to this curve at the point $(2, -5)$. Sketch your result on the graph.



Use derivative to find slope:

$f'(t) = -6t + 5$

If $t = 2$, then

$f'(2) = -6(2) + 5 = -7.$

So the slope of the tangent line is -7.

Finish with point-slope setup:

$y - (-5) = -7(x - 2)$

$y + 5 = -7x + 14$

$$\boxed{y = -7x + 9}$$