Math 31 - Quiz 1.2 - PRSD VC

February 25 2019 Name _____

Find the derivative of the following. You do **not** need to simplify. No marks will be awarded on this quiz for simplification. 2 marks for each question for a total of 4 marks.

1. $f(x) = \sqrt[3]{x^2} - \dfrac{1}{3x^2} - \dfrac{25}{4}$

$$
\begin{aligned}
f(x) &= x^{\frac{2}{3}} - \frac{1}{3}x^{-2} - \frac{25}{4} \\
f'(x) &= \frac{2}{3}x^{-\frac{1}{3}} - \left(\frac{1}{3}\right)(-2)x^{-3} + 0 \\
&= \frac{2}{3}x^{-\frac{1}{3}} + \frac{2}{3}x^{-3}
\end{aligned}
$$

2. $g(x) = (3\sqrt{x} + 4x)(x^3 - 6x^2 - 15)$

$$
\begin{aligned}
g'(x) &= (3 \cdot \left(\frac{1}{2}x^{-\frac{1}{2}}\right) + 4)(x^3 - 6x^2 - 15) + (3\sqrt{x} + 4x)(3x^2 - 12x) \\
&= \left(\frac{3}{2}x^{-\frac{1}{2}} + 4\right)(x^3 - 6x^2 - 15) + (3\sqrt{x} + 4x)(3x^2 - 12x)
\end{aligned}
$$