Name: _____ **Quiz 1-A**

Math 151 Calculus I – Crawford **21 February 2017**

Books, notes (in any form), and calculators are not allowed. *Show all your work.* Good Luck!

1. (4 pts) Evaluate the following limit.

$$\lim_{x \to 1} \frac{2x^2 - 3x + 1}{x^2 + 2x - 3}$$

2. (4 pts) Determine whether the following function has a jump, removable, or infinite discontinuity at $x = -2$. [Show work to justify your answer.]

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

3. (7 pts) Given $f(x) = \sqrt{x}$,

(a). Use the limit definition $f'(a) = \lim_{h \to 0} \dfrac{f(a+h) - f(a)}{h}$ **OR** $f'(a) = \lim_{x \to a} \dfrac{f(x) - f(a)}{x - a}$ to show that the slope of the tangent line at $x = 9$ is $\dfrac{1}{6}$.

(b). Find the equation of the tangent line to $f(x) = \sqrt{x}$ at $x = 9$.