**9.0(a) Cumulative Review for Chapters 1 – 3**

**Evaluating Limits**

 $\lim\_{x\to 3}\frac{2x^{2}-5x-3}{x-3}$ $\lim\_{x\to 2}\frac{x^{4} - 16}{x-2}$

 $\lim\_{x\to 0}\frac{\sqrt{X+4 }-2}{x}$ $\lim\_{x\to -4^{+}}\frac{3x-1}{x+4}$

 Find $\lim\_{x\to 6-}f(x)$, $\lim\_{x\to 6+}f(x)$, and $\lim\_{x\to 6}f(x)$, if they exist.

1. $f\left(x\right)=\left\{\begin{array}{c}x+2, x<2\\2, 2 \leq x \leq 6\\14-2x, x>6\end{array}\right.$ b) $f\left(x\right)=\left\{\begin{array}{c}4\left(x-1\right), x<6\\x^{2}-12, x\geq 6\end{array}\right.$



Find the derivative of the following functions directly from the definition of a derivative

1. $y=2x^{2}+3x$ b) $y=\sqrt{x+3}$

The position of a particle is described by the function $s\left(t\right)=t^{3}-6t^{2}+9t$.

1. When is the particle at rest?

1. What is the velocity after 2 seconds?

1. What is the acceleration after 3 seconds?
2. When is the velocity positive and when is it negative?
3. What is the total distance traveled during the first 5 seconds?