9.0(a) Cumulative Review for Chapters 1 – 3

Evaluating Limits

$\lim_{x\to 3} \frac{2x^2-5x-3}{x-3}$

$\lim_{x\to 2} \frac{x^4-16}{x-2}$

$\lim_{x\to 0} \frac{\sqrt{X+4}-2}{x}$

$\lim_{x\to -4^+} \frac{3x-1}{x+4}$

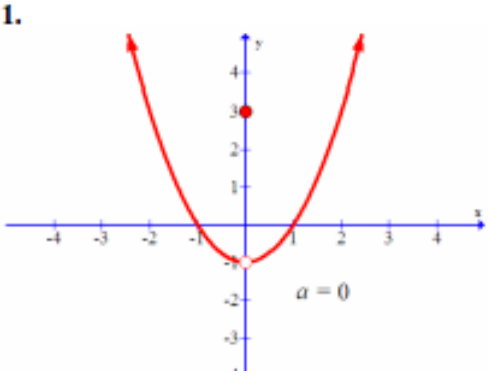
Find $\lim_{x\to 6-} f(x)$, $\lim_{x\to 6+} f(x)$, and $\lim_{x\to 6} f(x)$, if they exist.

a) $f(x) = \begin{cases} x+2, & x<2 \\ 2, & 2 \le x \le 6 \\ 14-2x, & x>6 \end{cases}$

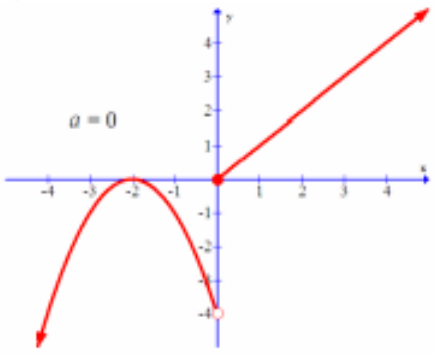
b) $f(x) = \begin{cases} 4(x-1), & x<6 \\ x^2-12, & x \ge 6 \end{cases}$

Find $\lim_{x\to a^+} f(x)$, $\lim_{x\to a^-} f(x)$ and $\lim_{x\to a} f(x)$, if they exist.

1.



4.



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

a) $y = 2x^2 + 3x$

b) $y = \sqrt{x+3}$

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

(a) When is the particle at rest?

(b) What is the velocity after 2 seconds?

(c) What is the acceleration after 3 seconds?

(d) When is the velocity positive and when is it negative?

(e) What is the total distance traveled during the first 5 seconds?