Calculus Homework #2

1)   Graph, and then use the graph, along with a detailed table of values, to find
$$\lim_{x \to -3} \frac{\sqrt{1-x}-2}{x+3}$$, if it exists.

2)   Find L, the $\lim_{x \to 3}(6x-18)$, and then use the definition of a limit to prove that the limit is L.

3)   Graph, and then use the graph, along with a detailed table of values, to find $\lim_{x \to 0} \sec x$, if it exists.

4)   Find L, the $\lim_{x \to 5}(x^2+4)$, and then find $\delta > 0$ such that $|f(x)-L| < .01$
whenever $0 < |x-a| < \delta$

5)   Graph, and then use the graph, along with a detailed table of values, to find
$$\lim_{x \to 1} f(x) \text{ if } f(x) = \begin{cases} x^2+2 & \text{for } x \neq 1 \\ 1 & \text{for } x = 1 \end{cases}, \text{ if it exists.}$$

6)   Find $\lim_{x \to 4}(x^2)$

7)   Find $\lim_{x \to 0}(2x-1)$

8)   Find $\lim_{x \to 2}(-x^2+x-2)$

9)   Find $\lim_{x \to 3}\sqrt{x+1}$

10)   Find $\lim_{x \to -4}(x+3)^2$

11)   Find $\lim_{x \to 2}\left(\frac{1}{x}\right)$

Calculus Homework #2

12) Find $\lim\limits_{x \to -1} \dfrac{x^2 + 1}{x}$

13) If $\lim\limits_{x \to c} f(x) = 2$ and $\lim\limits_{x \to c} g(x) = 3$, find:

A. $\lim\limits_{x \to c}[5g(x)]$ B. $\lim\limits_{x \to c}[f(x) + g(x)]$ C. $\lim\limits_{x \to c}[f(x)g(x)]$ D. $\lim\limits_{x \to c}\dfrac{f(x)}{g(x)}$

14) Find $\lim\limits_{x \to 3} \dfrac{\sqrt{x+1}}{x-4}$

15) Find $\lim\limits_{x \to \frac{\pi}{2}} \sin x$

16) Find $\lim\limits_{x \to 1} \cos(\pi x)$

17) Find $\lim\limits_{x \to \frac{5\pi}{6}} \sin x$

18) Find $\lim\limits_{x \to 0} \sec(2x)$

19) Find $\lim\limits_{x \to 3} \tan\left(\dfrac{\pi x}{4}\right)$

20) If $\lim\limits_{x \to c} f(x) = 4$, find:

A. $\lim\limits_{x \to c}[f(x)]^3$ B. $\lim\limits_{x \to c}\sqrt{f(x)}$ C. $\lim\limits_{x \to c}[3f(x)]$ D. $\lim\limits_{x \to c}[f(x)]^{\frac{3}{2}}$