

Name \_\_\_\_\_

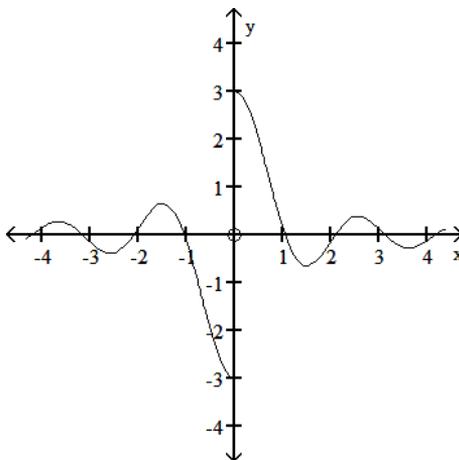
PLEASE SHOW ALL YOUR WORK AS NEATLY AS POSSIBLE :

SHOW ALL YOUR WORK TO RECEIVE FULL POINTS :

Use the graph to evaluate the limit. Does the limit exist ? Why?

1)  $\lim_{x \rightarrow 0^-} f(x) =$

$\lim_{x \rightarrow 0^+} f(x) =$



2) find the limits :

a)  $\lim_{x \rightarrow 0} \frac{x - \sin(x)}{x}$

b)  $\lim_{x \rightarrow 0} \frac{\sin(2x)}{2x^2 + x}$

3) Find the limits :

a)  $\lim_{x \rightarrow -\pi} \sqrt{x+9} \cos(x+\pi)$

b)  $\lim_{x \rightarrow \infty} \frac{x - \cos x}{x}$

4) find the limits :

a)  $\lim_{x \rightarrow 0} \frac{1 - \cos(x)}{x^2}$

b)  $\lim_{x \rightarrow 4} \frac{\sqrt{x} - 2}{x - 4}$

5) Find the following limits :

a)  $\lim_{x \rightarrow \pi} \frac{\sin(x)}{2 + \cos(x)}$

b)  $\lim_{x \rightarrow 1} \frac{\sqrt{2x+1} - \sqrt{3}}{x}$

6) Find the limit.

$$\lim_{x \rightarrow \infty} (4x - \sqrt{16x^2 - x})$$

7) Evaluate the limit :  $\lim_{x \rightarrow -4} \frac{\frac{1}{x} + \frac{1}{4}}{x + 4}$

8) Find the limit :  $\lim_{x \rightarrow 7} \frac{\sqrt{x + 2} - 3}{x - 7}$

9) Find the limit :  $\lim_{x \rightarrow 1} \frac{x^3 - 1}{x^2 - 1}$

10) Given :  $f(x) = \frac{1}{(x-1)}$

Find the instantaneous rate of change .