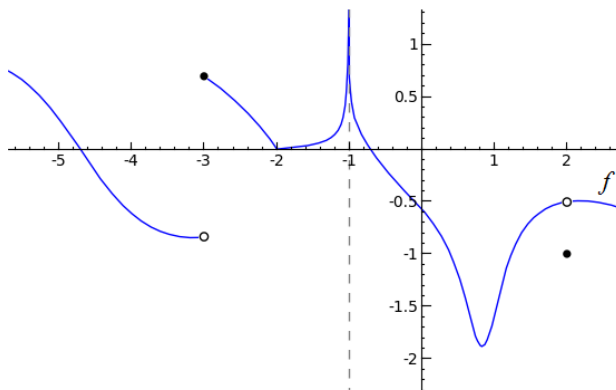


Name: _____

Period: _____

1. Use the graph below to answer the following questions.



a) $\lim_{x \rightarrow -3^+} f(x)$

b) $\lim_{x \rightarrow -3^-} f(x)$

c) $\lim_{x \rightarrow -3} f(x)$

d) $\lim_{x \rightarrow -1} f(x)$

e) $\lim_{x \rightarrow 2} f(x)$

f) $\lim_{x \rightarrow -2} f(x)$

2. Determine each of the limits algebraically.

a) $\lim_{x \rightarrow -\infty} \frac{5x^2 - 3x - 9}{2(4 - x)^2}$

b) $\lim_{x \rightarrow 5} \frac{x^2 + 3x - 40}{2x - 10}$

c) $\lim_{x \rightarrow 3} \frac{2 - \sqrt{7 + x}}{x + 3}$

d) $\lim_{x \rightarrow 2} \begin{cases} x + 1 & x < 2 \\ \cos(\pi x) & x \geq 2 \end{cases}$

e) $\lim_{x \rightarrow -5} \frac{\frac{3}{x} + \frac{x + 8}{5}}{x + 5}$

f) $\lim_{x \rightarrow 0} \frac{\sin(4x)}{3x^2}$

3. Find the values of c so that the function $h(x) = \begin{cases} x^2 - c^2 & x < 2 \\ x + c & x \geq 2 \end{cases}$ is continuous.



4. Provide a function with the following criteria: $f(0) > 0$, $f(2) < 0$, but there are no zeros in the interval $[0,2]$.

5. Create an equation with the given characteristics. There are two separate problems here, so there should be two different functions.

a) removable discontinuity at $x = 3$ and non-removable at $x = -7$.

b) $\lim_{x \rightarrow 0} f(x) = 3$ and $f(0) = -1$

6. Evaluate $\lim_{a \rightarrow 0} \frac{(x+a)^2 - x^2}{a}$