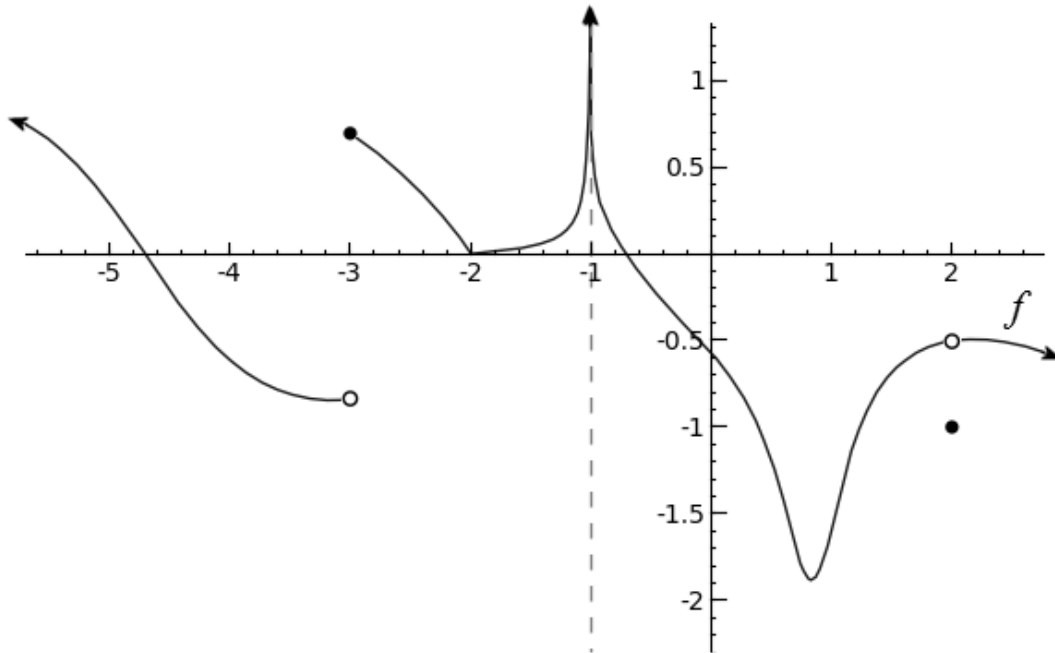


**Calculus 30**  
**Chapter 3 – Limits and Continuity Practice Assessment**

Name: \_\_\_\_\_

1. Use this graph to answer the following questions:



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

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

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

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

e)  $\lim_{x \rightarrow -\infty} f(x)$

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

g) List all point where  $f(x)$  is not continuous.

2. Find the following Limits. All 9 types are given here, but you may use any of the nine systems of finding limits that you wish for each question.

a)  $\lim_{x \rightarrow 2} x + 3$

b)  $\lim_{x \rightarrow -4} \frac{x + 6}{(x + 4)^2}$

c)  $\lim_{x \rightarrow 6} \frac{\sqrt{3 + x} - 3}{x - 6}$

d)  $\lim_{x \rightarrow \infty} \frac{\sqrt{4x^2 - x - 8}}{x^2 + 9}$

$$\text{e) } \lim_{x \rightarrow 6} \frac{x^2 - 7x + 6}{x^2 - 36}$$

$$\text{f) } \lim_{x \rightarrow \infty} \frac{6x - 5}{2x + 3}$$

$$\text{m) } \lim_{x \rightarrow 3^-} \frac{x - 3}{|x - 3|}$$

$$\text{n) } \lim_{x \rightarrow 0} \frac{(3 + x)^2 - 4(3 + x) + 3}{x}$$

g)

$$\lim_{x \rightarrow 1} f(x) \quad f(x) = \begin{cases} \frac{x+2}{x-2}, & x \in (-\infty, 1) \\ x^3 - 2x^2, & x \in [1, \infty) \end{cases}$$

3. Each of the following functions has a discontinuity, for each, tell what kind of discontinuity it has and where.

a)  $f(x) = \frac{x^3 + 1}{x + 1}$

b)  $f(x) = \frac{|x^2 - x - 20|}{x - 5}$

c)  $f(x) = \frac{x - 1}{x + 1}$

d)  $f(x) = \begin{cases} x + 1, & x \in (-\infty, 2] \\ x^3 - 2x^2, & x \in (2, \infty) \end{cases}$