

Math 241 Worksheet 3 (two-sided)

Name: _____

Section (circle one): **3** **4**

1. For the following function given by its graph, find the following limits.

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

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

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

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

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

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

$$\lim_{x \rightarrow 2^+} f(x)$$

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

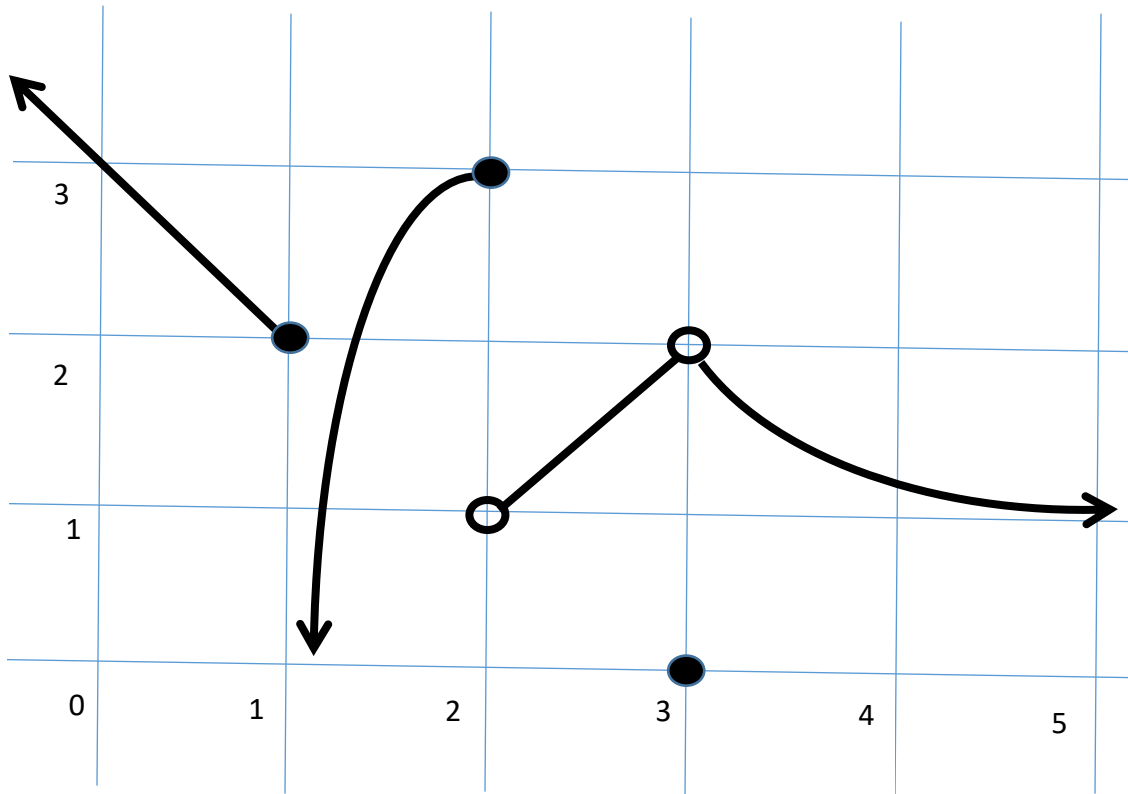
$$\lim_{x \rightarrow 3^-} f(x)$$

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

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

Are there any horizontal asymptotes? If yes, state the equations of the line(s).

Are there any vertical asymptotes? If yes, state the equations of the line(s).



2. Find the limits. Check the “type” of limit and use an appropriate technique.

(a) $\lim_{x \rightarrow -\infty} \frac{2x^2 - 1}{5x^2 + x + 4}$

(b) $\lim_{x \rightarrow \infty} \frac{5x^2 + x}{2x^3 + 1}$

(c) Write out how you use the Sandwich theorem to find $\lim_{x \rightarrow \infty} \frac{1 + 5 \cos x}{x}$.

(d) $\lim_{x \rightarrow 3+} \frac{x^2 - 10}{2x - 6}$