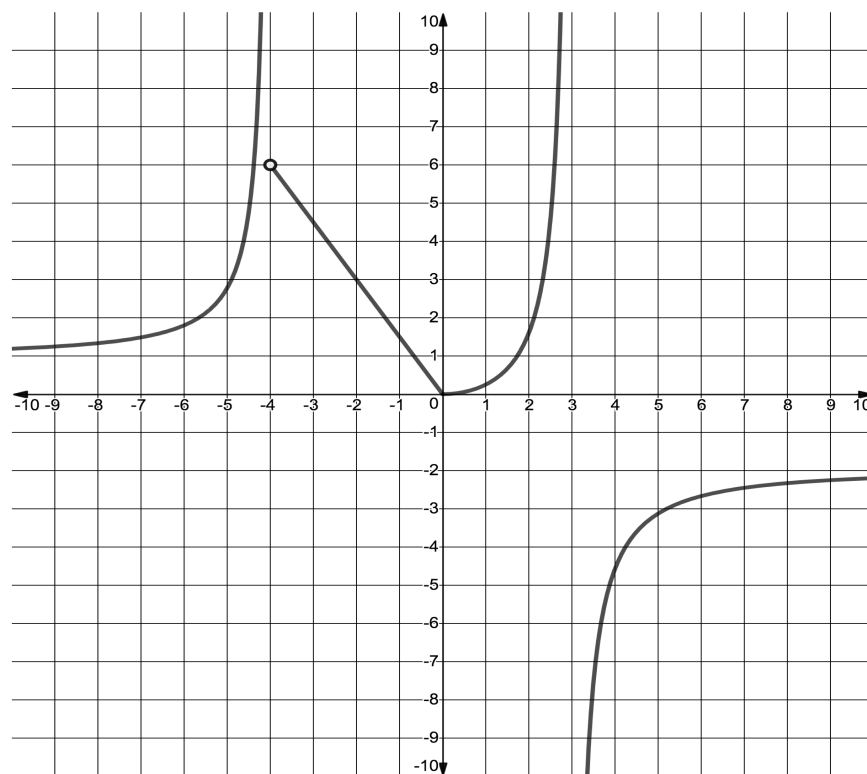


Name: _____

Group #: _____

1. Consider the graph of $f(x)$ in the graph below.



- (a) Find the following:

i. $\lim_{x \rightarrow -4^-} f(x)$

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

ii. $\lim_{x \rightarrow -4^+} f(x)$

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

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

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

- (b) State any horizontal asymptotes for $f(x)$. If there are none, state that.

- (c) State any vertical asymptotes for $f(x)$. If there are none, state that.

2. Evaluate the following analytically:

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

(e) $\lim_{x \rightarrow -4^+} \frac{3x}{x+4}$

(b) $\lim_{x \rightarrow -\infty} (7x^7 - 5x^3 + 4x - 1)$

(f) $\lim_{x \rightarrow -\infty} (1 - 2x + 5x^2 - 17x^3 - 4x^7)$

(c) $\lim_{x \rightarrow 3^+} \frac{4}{3-x}$

(g) $\lim_{x \rightarrow -5^+} \frac{(x+5)^2}{2x^2 + 10x}$

(d) $\lim_{x \rightarrow 0^+} \frac{1}{x+5}$

(h) $\lim_{\theta \rightarrow \pi^-} \csc(\theta)$

3. Using limits, find any horizontal and vertical asymptotes of $f(x) = \frac{2x^2}{3x - x^2}$. If there are none, state that.

Evaluate the following limits and give the equation for any horizontal asymptote (if there are none, state that).

4. $\lim_{x \rightarrow \infty} \frac{-5x^3 - 2x + 3}{3x^3 + 3x^2 - 5x}$

5. $\lim_{x \rightarrow \infty} \frac{4x^5 + 6x^2 - 2}{5 - 4x + 2x^3}$

6. $\lim_{x \rightarrow \infty} \frac{\sqrt[3]{x} + 4}{1 - 5\sqrt{x}}$