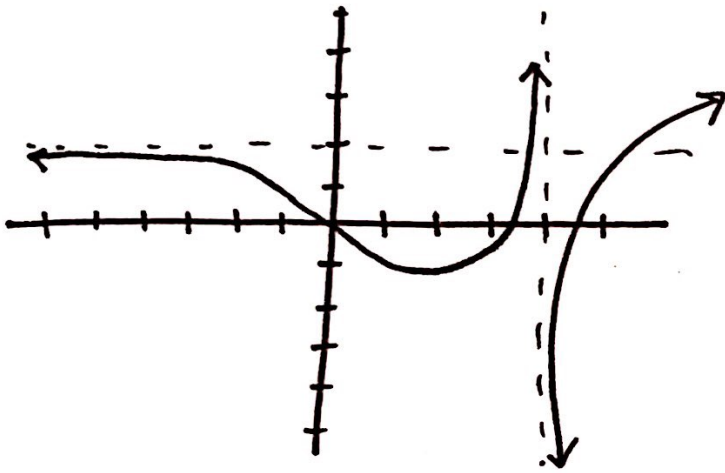


AP Calculus AB
Limits at Infinity
HW 1-8

Name: _____

Find the limit using the graph.



$$\lim_{x \rightarrow 2} f(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow 4^-} f(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow -\infty} f(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow 4^+} f(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow \infty} f(x) = \underline{\hspace{2cm}}$$

Find the limit without using a calculator.

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

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

$$3) \lim_{x \rightarrow \infty} \frac{|x|}{x}$$

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

$$5) \lim_{x \rightarrow \infty} \frac{4x^3 - 2x + 1}{x^2 - 2x + 1}$$

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

$$7) \lim_{x \rightarrow \infty} \frac{x^4}{4x^6 + 2x^2 - 4}$$

$$8) \lim_{x \rightarrow -\infty} 12x$$

$$9) \lim_{x \rightarrow \infty} \frac{\sqrt{2x^2 + 1}}{4x + 2}$$

$$10) \lim_{x \rightarrow \infty} \cos(2x)$$

$$11) \lim_{x \rightarrow -\infty} \frac{\sin 2x}{3x}$$

$$12) \lim_{x \rightarrow -\infty} x^3 - 4x^2 + 5$$

$$13) f(x) = \begin{cases} \frac{3x}{x+1}, & x \leq 0 \\ \frac{1}{x^2}, & x > 0 \end{cases}$$

$$\lim_{x \rightarrow \infty} f(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow -\infty} f(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow 0^-} f(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow 0^+} f(x) = \underline{\hspace{2cm}}$$