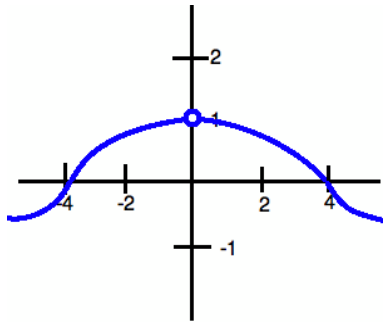


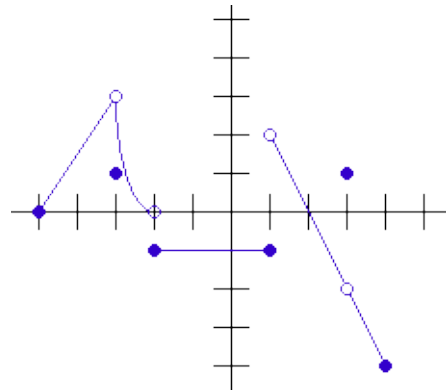
Limits – Graphs for help with notes



$$\lim_{x \rightarrow 0} f(x) =$$

$$\lim_{x \rightarrow 4} f(x) =$$

$$\lim_{x \rightarrow -4} f(x) =$$



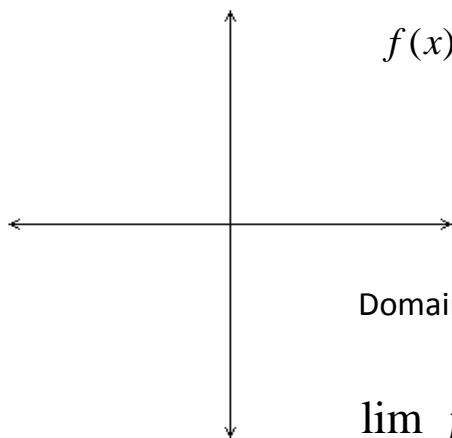
$$\lim_{x \rightarrow -3} f(x) =$$

$$f(-3) =$$

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

$$f(3) =$$

Ex: Graph it and write the domain.

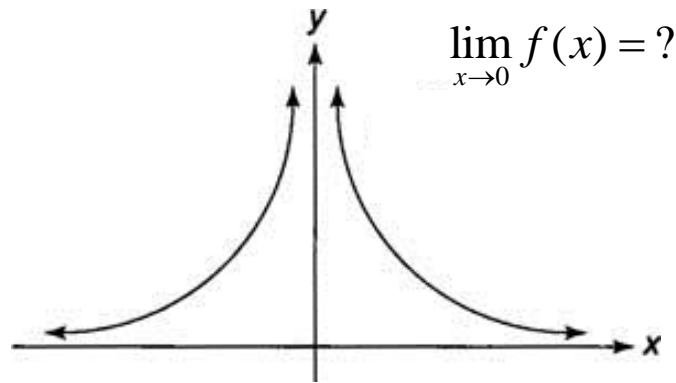


$$f(x) = \frac{(x+2)^2}{x+2}$$

Domain:

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

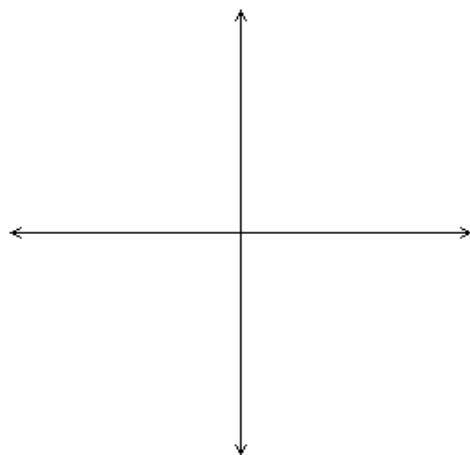
What about this one?



$$\lim_{x \rightarrow 0} f(x) = ?$$

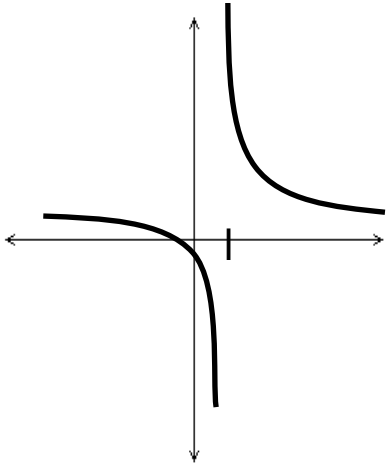
Limits at Vertical Asymptotes

Using this example, find the domain and graph it. $f(x) = \frac{x+3}{x-2}$



- Domain
- “Describe” the behavior of the graph as x-values **approach** the vertical asymptote.
 From the left:
 From the right:
- How do we do that?????

One-sided limits definitions:



Limit of $f(x)$ as x approaches 2 from the left (negative side):

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

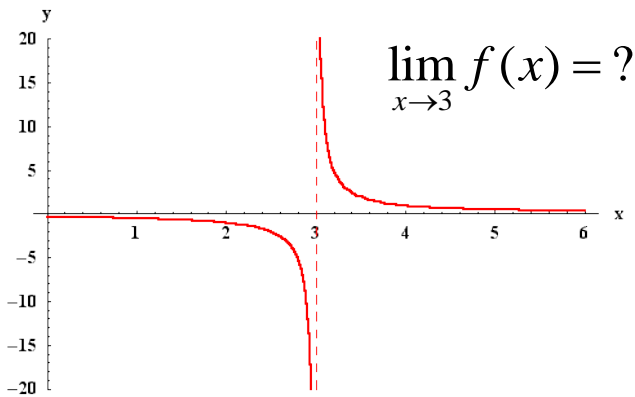
Limit of $f(x)$ as x approaches 2 from the right (positive side):

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

Limit of $f(x)$ as x approaches 2 is:

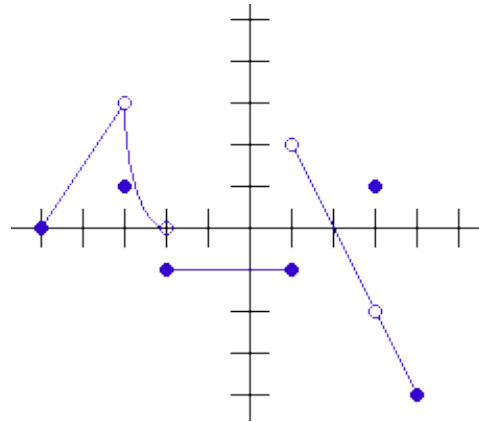
$$\lim_{x \rightarrow 2} f(x) = ?$$

What are your thoughts on this one?



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

What about these?



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

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

$$\lim_{x \rightarrow -5} f(x) =$$

$$\lim_{x \rightarrow 0} f(x) =$$

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

Using the graph at the right side above, evaluate:

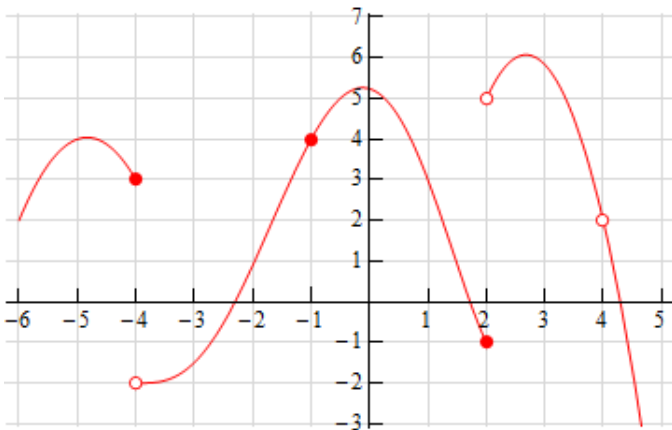
$$\lim_{x \rightarrow -2^-} f(x) =$$

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

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

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

Review:



$$\lim_{x \rightarrow -4} f(x) =$$

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

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

$$\lim_{x \rightarrow 4} f(x) =$$

$$f(4) =$$

$$f(2) =$$

Function f is continuous at a point a if the following conditions are satisfied.
