

LESSON 1.5 A

THE LIMIT OF A FUNCTION



WARM UP

- (a) Explain, in your own words, the meaning of the statement $\lim_{x \rightarrow a} f(x) = L$.
- (b) Give an example of a case where $\lim_{x \rightarrow a} f(x) \neq f(a)$. A picture will suffice.

PROBLEM

Use a table (e.g., your calculator) to determine, if possible, the following:

(a) $\lim_{x \rightarrow 3} 5x$

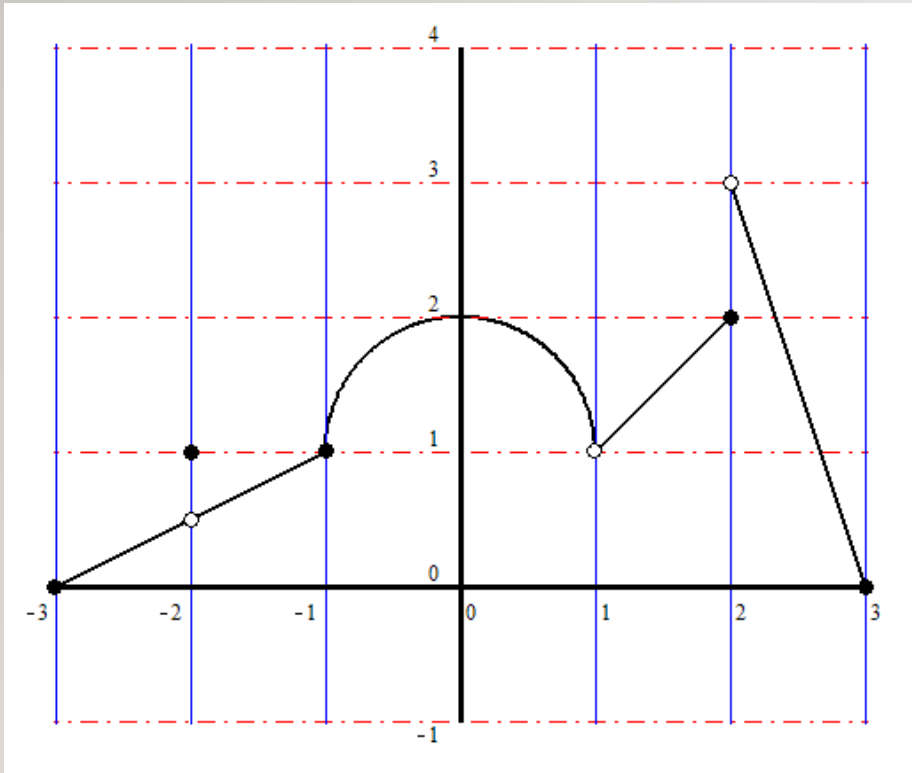
(b) $\lim_{x \rightarrow 1} \frac{x^2 - 1}{x - 1}$

(c) $\lim_{t \rightarrow 9} \frac{t - 9}{\sqrt{t} - 3}$

PROBLEM

Try to determine the value of $\lim_{x \rightarrow 0} \sin \frac{1}{x}$. What is your conclusion?

FILL IN THE BLANKS AS APPROPRIATE. BE PREPARED TO EXPLAIN YOUR ANSWERS!!



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

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

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

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

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

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

$$f(-2) = \underline{\hspace{2cm}}$$

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