

How to Study Limit Graphically

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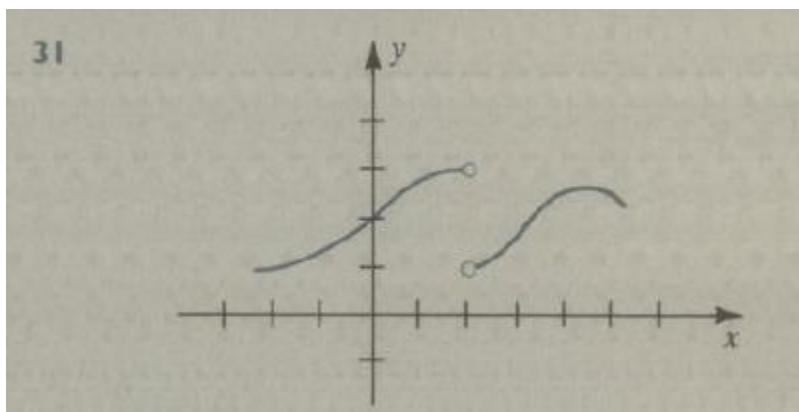
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Exercise # 1.1

Ex. 31-40 Refer to the graph to find each limit if it exists.

(a) $\lim_{x \rightarrow 2^-} f(x)$ (b) $\lim_{x \rightarrow 2^+} f(x)$ (c) $\lim_{x \rightarrow 2} f(x)$

(d) $\lim_{x \rightarrow 0^-} f(x)$ (e) $\lim_{x \rightarrow 0^+} f(x)$ (f) $\lim_{x \rightarrow 0} f(x)$



(a) $\lim_{x \rightarrow 2^-} f(x) = 3$ (b) $\lim_{x \rightarrow 2^+} f(x) = 1$

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

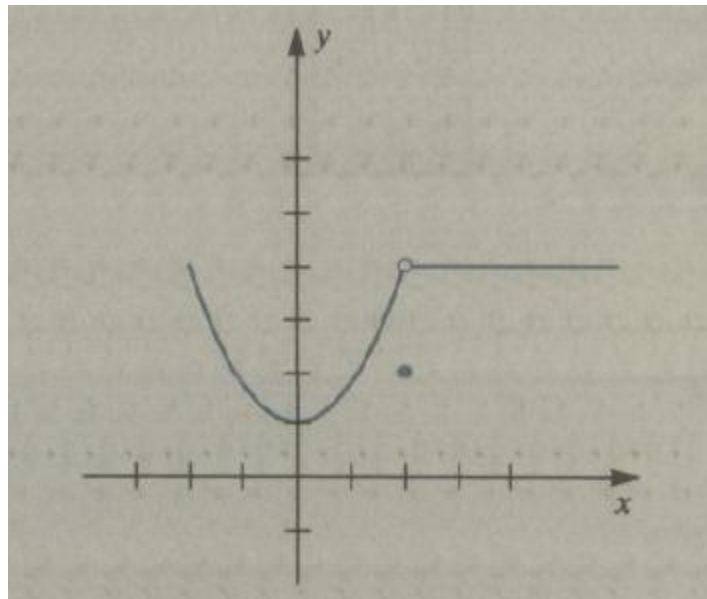
(c) $\lim_{x \rightarrow 2} f(x) = DNE$

(d) $\lim_{x \rightarrow 0^-} f(x) = 2$ (e) $\lim_{x \rightarrow 0^+} f(x) = 2$

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

(2) $\lim_{x \rightarrow 0} f(x) = 2$

32.



(a) $\lim_{x \rightarrow 2^-} f(x) = 4$

(b) $\lim_{x \rightarrow 2^+} f(x) = 4$

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

(c) $\lim_{x \rightarrow 2} f(x) = 4$

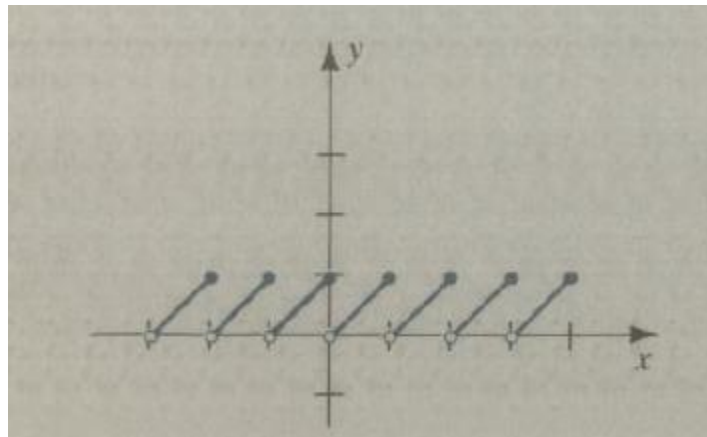
(d) $\lim_{x \rightarrow 0^-} f(x) = 1$

(e) $\lim_{x \rightarrow 0^+} f(x) = 1$

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

(f) $\lim_{x \rightarrow 0} f(x) = 1$

35.



$$(a) \lim_{x \rightarrow 2^-} f(x) = 1$$

$$(b) \lim_{x \rightarrow 2^+} f(x) = 0$$

$$\text{As } \lim_{x \rightarrow 2^-} f(x) \neq \lim_{x \rightarrow 2^+} f(x)$$

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

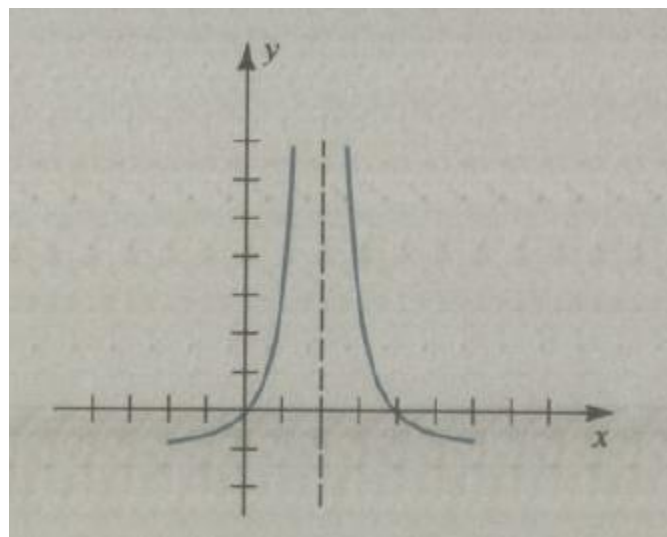
$$(d) \lim_{x \rightarrow 0^-} f(x) = 1$$

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

$$\lim_{x \rightarrow 0^-} f(x) \neq \lim_{x \rightarrow 0^+} f(x)$$

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

38.



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

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

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

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

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

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

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

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