Paul's Online Notes

Home / Calculus I / Limits / One-Sided Limits

Section 2.3 : One-Sided Limits - Practice Problems

1. Below is the graph of f(x). For each of the given points determine the value of f(a), $\lim_{x \to a^{-}} f(x)$, $\lim_{x \to a^{+}} f(x)$, and $\lim_{x \to a} f(x)$. If any of the quantities do not exist clearly explain why.

(a) a = -4 (b) a = -1 (c) a = 2 (d) a = 4

[Solution]



2. Below is the graph of f(x). For each of the given points determine the value of f(a), $\lim_{x \to a^{-}} f(x)$, $\lim_{x \to a^{+}} f(x)$, and $\lim_{x \to a} f(x)$. If any of the quantities do not exist clearly explain why.

(a) a = -2 (b) a = 1 (c) a = 3 (d) a = 5

[Solution]



3. Sketch a graph of a function that satisfies each of the following conditions.

$$\lim_{x
ightarrow2^{-}}f\left(x
ight)=1 \qquad \qquad \lim_{x
ightarrow2^{+}}f\left(x
ight)=-4 \qquad \qquad f\left(2
ight)=1$$

[Solution]

4. Sketch a graph of a function that satisfies each of the following conditions.

$$egin{aligned} &\lim_{x o 3^-}f\left(x
ight)=0 & \lim_{x o 3^+}f\left(x
ight)=4 & f\left(3
ight) ext{ does not exist} \ &\lim_{x o -1}f\left(x
ight)=-3 & f\left(-1
ight)=2 \end{aligned}$$

[Solution]

© 2003 - 2023 Paul Dawkins

Page Last Modified : 11/16/2022