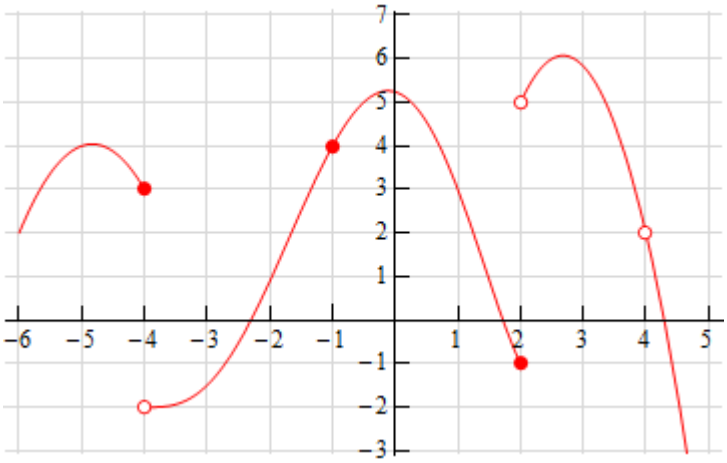
Paul's Online Notes

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)** $a=4$

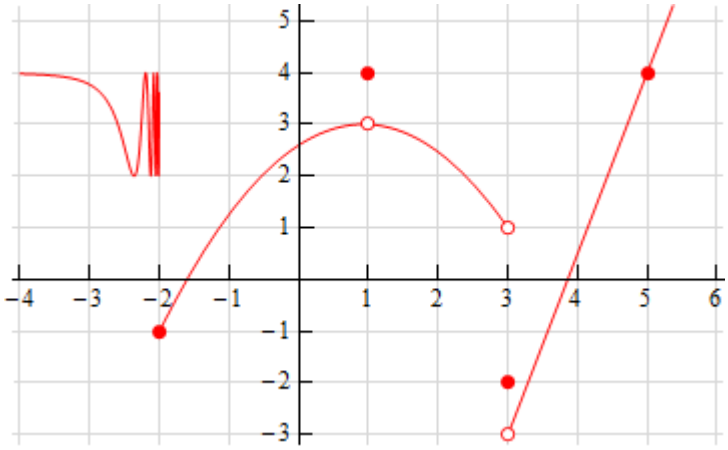
[Solution]



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.

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

[Solution]

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

$$\lim_{x\to 3^-} f(x)=0 \qquad \lim_{x\to 3^+} f(x)=4 \qquad f(3) \text{ does not exist}$$
$$\lim_{x\to -1} f(x)=-3 \qquad f(-1)=2$$

[Solution]

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