1.4b The Limit of a Function (Con't)

Example 1.4b.1

Determine $\lim_{x\to 3}\left(f(x)\right)$ for

$$f(x)=\begin{cases} x-4, & x\le 3 \\ x^2-10, & x>3 \end{cases}$$

Note: $x=3$ is a "break-point" for the piecewise defined f

$\Rightarrow$ 2 ONE SIDED LIMITS

$\lim_{x\to 3^-}\left(f(x)\right) = \lim_{x\to 3^-}(x-4) = -1$

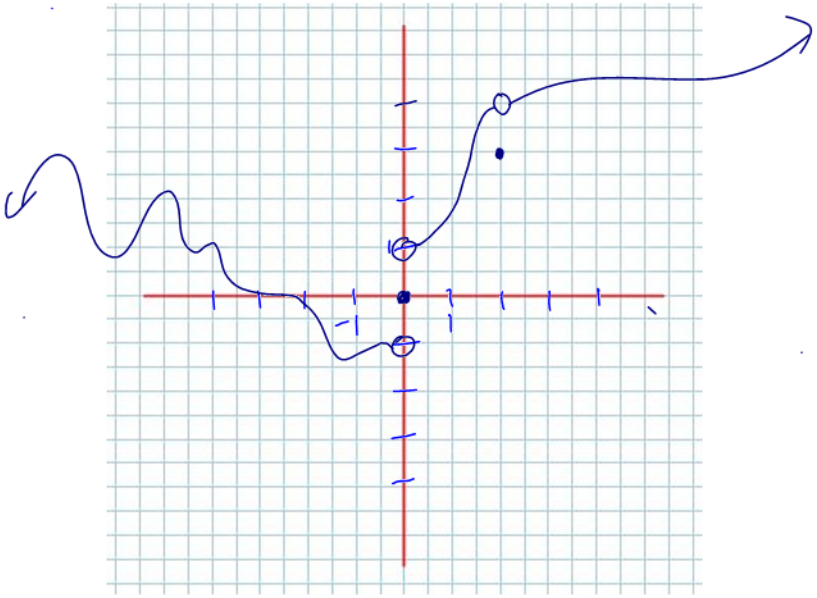
$\lim_{x\to 3^+}\left(f(x)\right) = \lim_{x\to 3^+}(x^2-10) = -1$

$\therefore \lim_{x\to 3}\left(f(x)\right) = -1$

Example 1.4b.2

Sketch the graph of a function $f(x)$ with the following properties:

1) $\lim_{x\to 0^-}\left(f(x)\right)=-1$
2) $\lim_{x\to 0^+}\left(f(x)\right)=+1$
3) $f(0)=0$ $\Rightarrow$ pt $(0,0)$
4) $\lim_{x\to 2}\left(f(x)\right)=4$
5) $f(2)=3$ pt $(2,3)$



Class/Homework for Section 1.4b

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