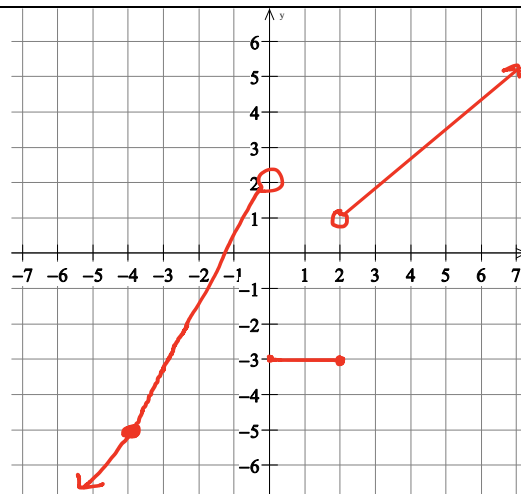


# NOTES

## 2.3 Application and Extension

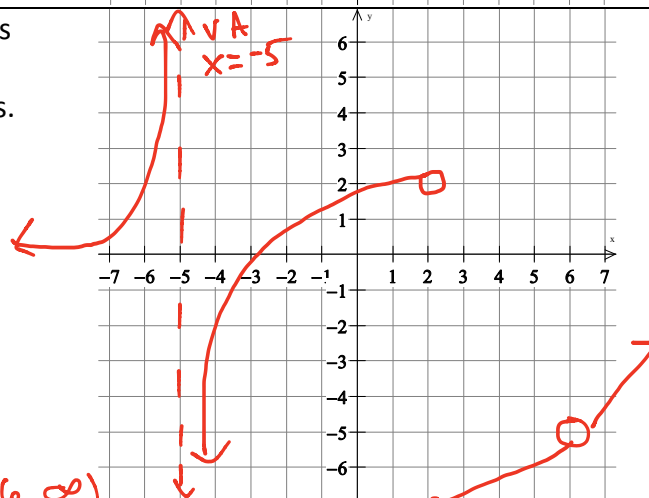
3) Sketch (freehand) a graph of a function  $f$  that satisfies all of the following conditions:

- $\lim_{x \rightarrow -4} f(x) = -5$
- $\lim_{x \rightarrow 0^+} f(x) = f(0)$
- $f$  is increasing on  $(-\infty, 0)$ ,  $(2, \infty)$
- $f(2) = -3$
- $\lim_{x \rightarrow 2^-} f(x) < \lim_{x \rightarrow 2^+} f(x)$



4) Sketch your own function with multiple discontinuities (nonremovable and removable). In the space below, describe your graph using limits for the discontinuities. Also share the intervals on which it is increasing and decreasing.

$\lim_{x \rightarrow -5^-} f(x) = \infty$	$\lim_{x \rightarrow 2^-} f(x) = 2$	$\lim_{x \rightarrow 6^-} f(x) = -5$
$\lim_{x \rightarrow -5^+} f(x) = -\infty$	$\lim_{x \rightarrow 2^+} f(x) = -7$	$\lim_{x \rightarrow 6^+} f(x) = -5$
		$f(6) = \text{DNE}$



INC INT =  $(-\infty, -5) \cup (-5, 2) \cup (2, 6) \cup (6, \infty)$

DEC INT =  $\emptyset$