

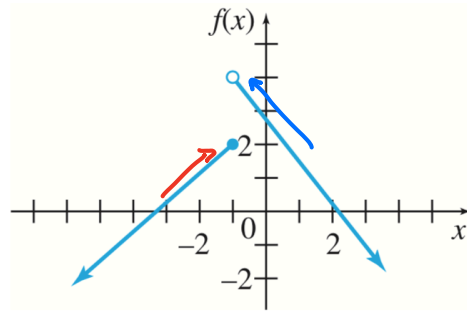
Math 1121

Homework #9

#2, #10

#2

Discontinuous at  $x = -1$



a)  $f(-1) = 2$  (filled in circle)

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

c)  $\lim_{x \rightarrow -1^+} f(x) = 4$

d)  $\lim_{x \rightarrow -1} f(x)$  DNE (two different values)

e) Condition #2 is violated,

since  $\lim_{x \rightarrow -1} f(x)$  DNE.

#10  $f(x) = \frac{x^2 - 25}{x + 5}$

$x + 5 = 0$   
 $x = -5$

discontinuous at  $x = -5$

$$\lim_{x \rightarrow -5} \frac{x^2 - 25}{x + 5} \rightarrow \frac{(-5)^2 - 25}{-5 + 5} = \frac{0}{0}$$

$$= \lim_{x \rightarrow -5} \frac{(x-5)\cancel{(x+5)}}{\cancel{x+5}} = \lim_{x \rightarrow -5} x - 5 = -5 - 5 = \boxed{-10}$$