38. $\frac{x}{x^2-1}$

NR $x=1$

NR $x=-1$

$\mathbb{R}, x \neq 1, x \neq -1$

40. $\dfrac{x-3}{x^2-9}$

$\dfrac{\cancel{x-3}}{(x+3)\cancel{(x-3)}}$

NR $x=-3$

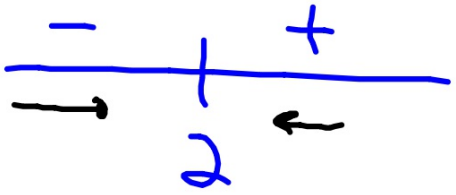
R $x=3$

36 $\cos \frac{\pi x}{2}$

42. $\dfrac{x-1}{x^2+x-2} = \dfrac{x-1}{(x+2)(x-1)}$

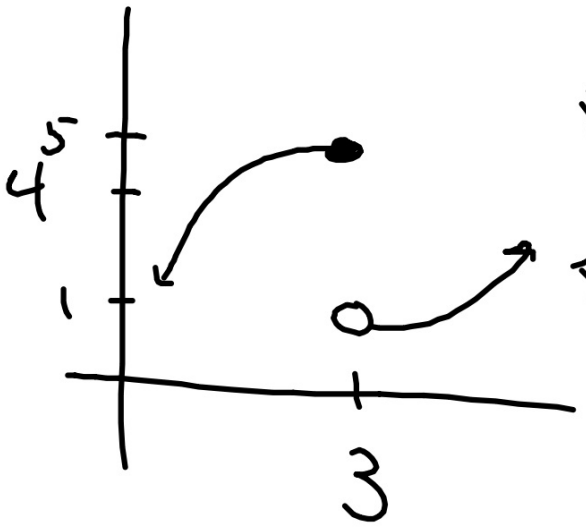
1.4 B Sided Limits

A. $\lim_{x \to c^+} f(x) = L$



$\lim_{x \to c^-} f(x) = L$

Ex.



$\lim_{x \to 3} f(x) = \text{DNE}$

$\lim_{x \to 3^+} f(x) = 1$

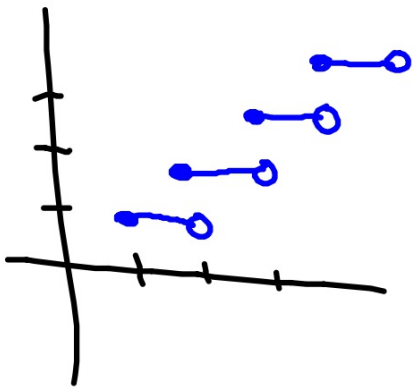
$\lim_{x \to 3^-} f(x) = 5$

1. $\lim_{x \to c} f(x) = L$

$\lim_{x \to c^+} f(x) = \lim_{x \to c^-} f(x)$

2. $[\![x]\!]$ = greatest integer function

x	y
2.4	2
2.7	2
3.1	3
3.99	3



$\lim_{x \to 2}$ DNE

$\lim_{x \to 2^-} = 1$

$\lim_{x \to 2^+} = 2$

B	6'	17
	5'6"	14

Intermediate Value Theorem (IVT) -

if f is continuous on $[a,b]$,

$f(a) < k < f(b)$, $\exists\, a$ (such that $f(c) = k$.

Ex. $f(x) = x - 4 \quad [-2, 5]$

$f(-2) = -6$

$f(4) = 0$

$f(5) = 1$

Ex. $f(x) = x^3 + 2x - 1 \quad [0, 1]$

$f(0) = -1$

$= 0$

$f(1) = 2$

1.4 1-6

7-14

21, 75, 77, 79-82, 62

$$\frac{2(7)}{\sqrt{625-7^2}} = \frac{14}{\sqrt{576}} = \frac{14}{24} = \frac{7}{12}$$

63.