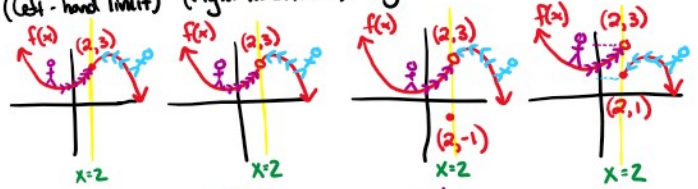


$\lim_{x \rightarrow c} f(x) = L$ "The limit as x approaches c of $f(x)$ "

$\lim_{x \rightarrow c^-} f(x) \neq \lim_{x \rightarrow c^+} f(x) \Rightarrow \lim_{x \rightarrow c} f(x) = \text{DNE}$
(left-hand limit) (right-hand limit) (general limit)



$f(2) = \underline{3}$	$\underline{\text{DNE}}$	$\underline{-1}$	$\underline{1}$
$\lim_{x \rightarrow 2^-} f(x) = \underline{3}$	$\underline{3}$	$\underline{3}$	$\underline{3}$
$\lim_{x \rightarrow 2^+} f(x) = \underline{3}$	$\underline{3}$	$\underline{3}$	$\underline{1}$
$\lim_{x \rightarrow 2} f(x) = \underline{3}$	$\underline{3}$	$\underline{3}$	$\underline{\text{DNE}}$

Annotations: "some" (between 3 and 3), "different" (between 3 and 1)

Method 1: Substitution

$$\lim_{x \rightarrow 2} (3x^2 - 4x + 1) = \boxed{5}$$

$$3(2)^2 - 4(2) + 1 = 12 - 8 + 1$$

Method 2: Factor and Cancel

$$\lim_{x \rightarrow 3} \frac{x^2 - 5x + 6}{x - 3} \rightarrow \lim_{x \rightarrow 3} \frac{(x-3)(x-2)}{x-3} \rightarrow \lim_{x \rightarrow 3} (x-2) = \boxed{1}$$

$$3 - 2 = 1$$

Try Subst: $\frac{(3)^2 - 5(3) + 6}{3 - 3} \rightarrow \frac{0}{0}$ undefined

Method 3: Multiply by Conjugate

$$\lim_{x \rightarrow 4} \frac{4 - x}{2 - \sqrt{x}} \cdot \frac{2 + \sqrt{x}}{2 + \sqrt{x}} \rightarrow \lim_{x \rightarrow 4} \frac{(4-x)(2+\sqrt{x})}{4-x} \rightarrow \lim_{x \rightarrow 4} (2 + \sqrt{x}) = \boxed{4}$$

Try Subst: $\frac{4-4}{2-\sqrt{4}} \rightarrow \frac{0}{0}$ undefined

Try F&C: Does Not Factor

① Pick the numerator or denominator, whichever has the $\sqrt{\quad}$ with an x in it

② Identify the conjugate

$$2 + 3i \rightarrow 2 - 3i \quad \sqrt{x+5} - 3 \rightarrow \sqrt{x+5} + 3$$

③ Multiply top and bottom by conjugate