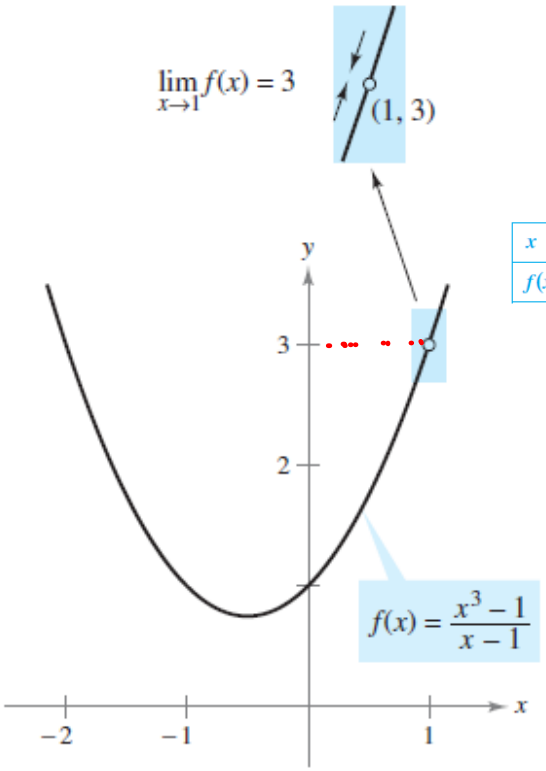
1.2 Finding Limits Graphically and Numerically

Objective: Given a function students will determine a limit of a function numerically and graphically.

What is a limit?

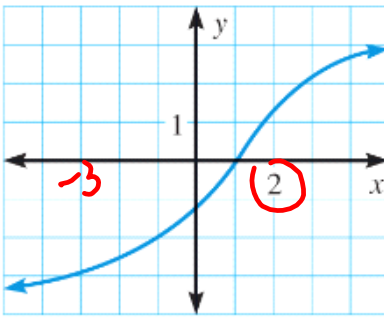


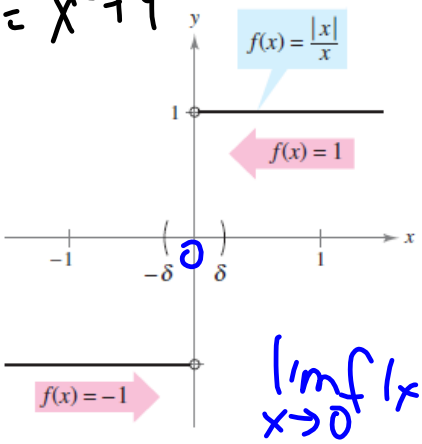
	x approaches 1 from the left.					x approaches 1 from the right.			
x	0.75	0.9	0.99	0.999	1	1.001	1.01	1.1	1.25
$f(x)$	2.313	2.710	2.970	2.997	?	3.003	3.030	3.310	3.813
	$f(x)$ approaches 3.					$f(x)$ approaches 3.			

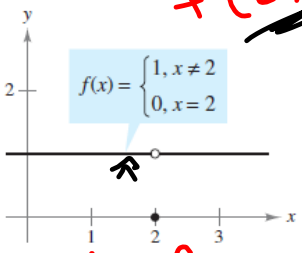
informal definition of a limit

$\lim_{x \to c} f(x)$

~~if the value of f(c) exist then it is f(c),~~ ~~otherwise~~ it is the y value which the curve is getting close to from the right and the left.







Estimate the following limit numerically by completing the table.

$$\lim_{x \to 2} \frac{x^2 - 3x + 2}{x - 2}$$

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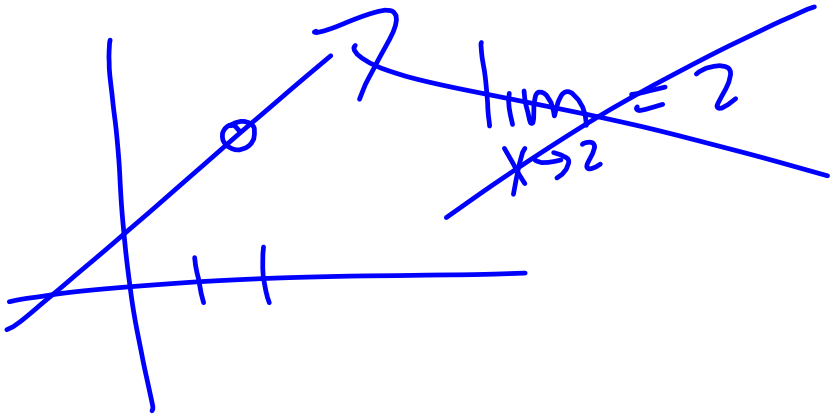
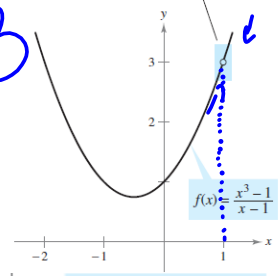
x	1.75	1.9	1.99	1.999	2	2.001	2.01	2.1	2.25
$f(x)$	.75	.9	.99	.999	und	1.001	1.01	1.1	1.25

Then use a graphing utility to estimate the limit graphically.

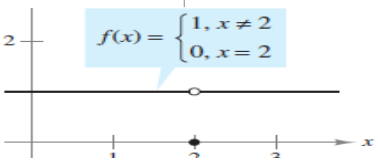


Example 1

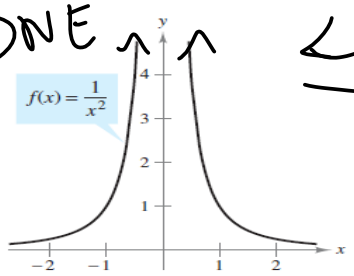
a) $\lim_{x\to 1} f(x) =$ 3



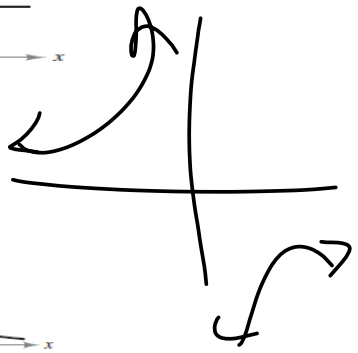
b) $\lim_{x\to 2} f(x) =$ 1



c) $\lim_{x\to 0} f(x) =$ DNE or ∞



$f(x) = -\frac{1}{x}$



Example 2

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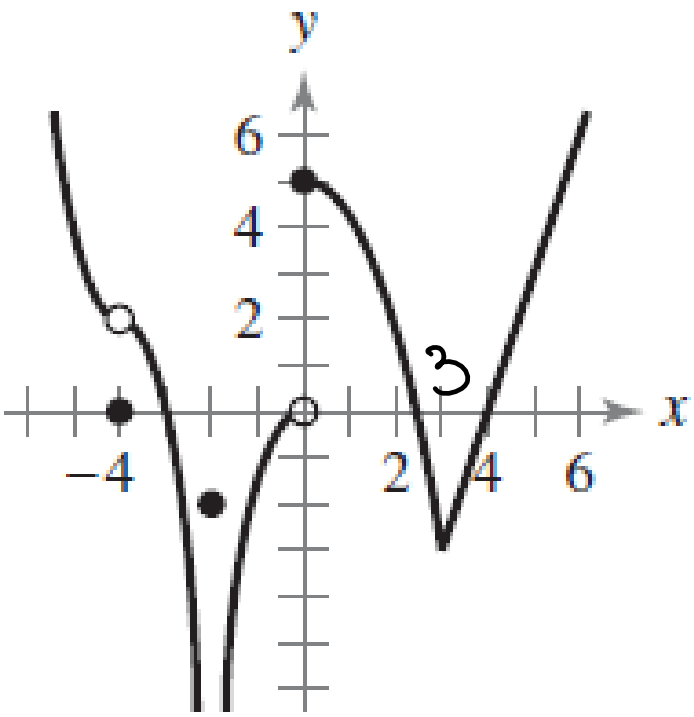
a) $\lim_{x\to 1} f(x) =$ 428.

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

c) $\lim_{x\to 0} f(x) =$ DNE

d) $\lim_{x\to -4} f(x) =$ 2



Example 3

$f(2)=1$

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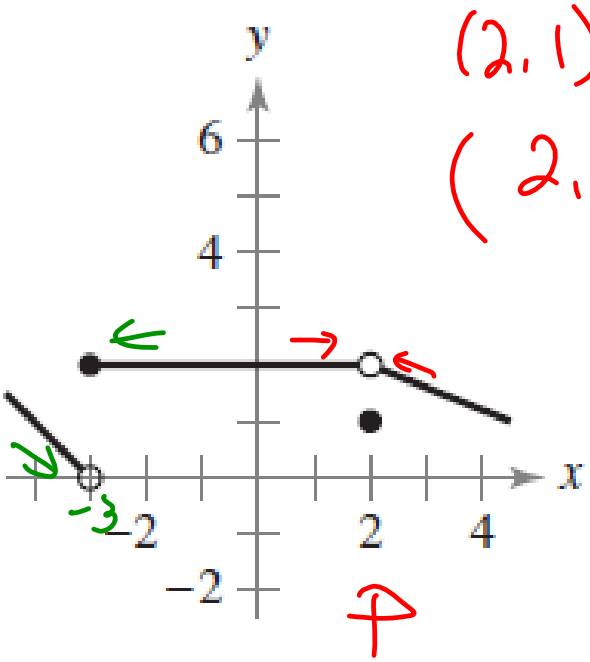
27.

a) $\lim_{x\to 2} f(x) =$ ~~DNE~~ 2

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

c) $\lim_{x\to 0} f(x) =$ 2

d) $\lim_{x\to 4} f(x) =$ 1



(2, 1)

(2, ~~1~~)