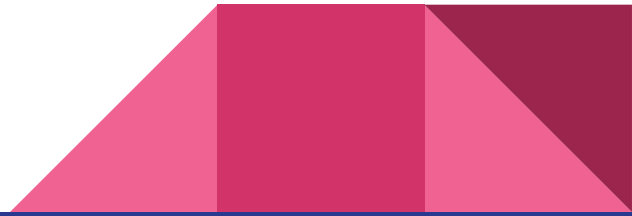
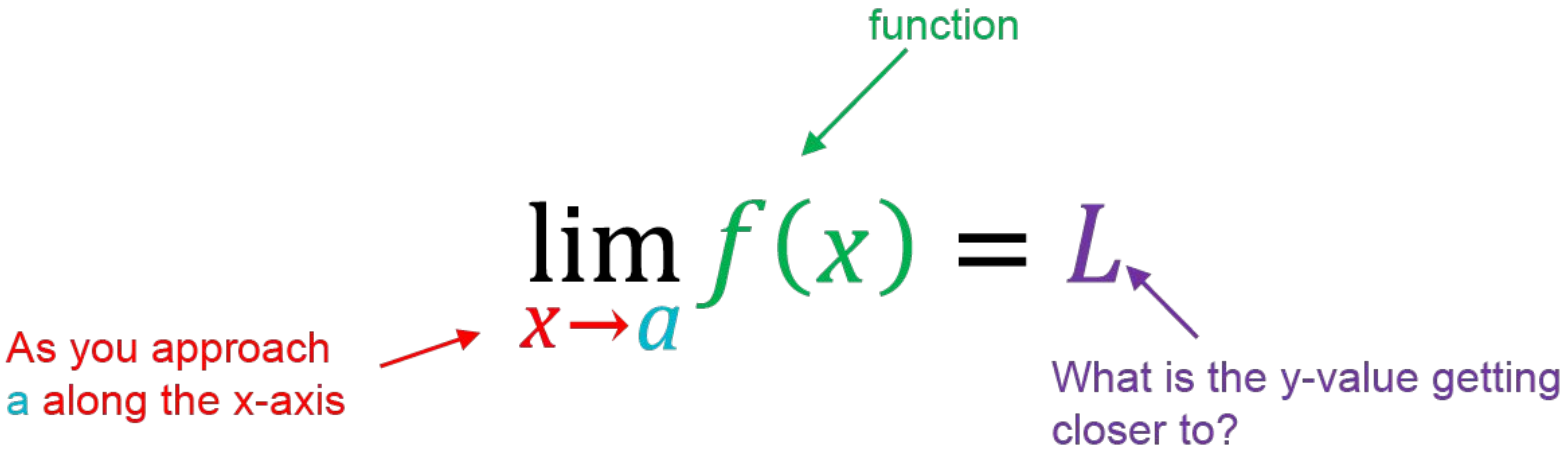
Rates of change and limits

MTH 201 -- Module 1B part 2

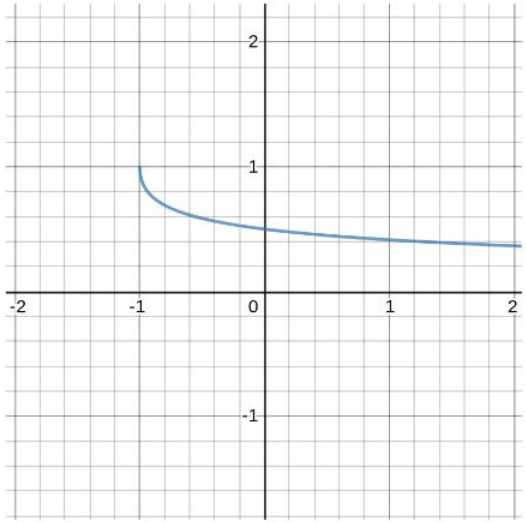
Today

- Review of the concept of limits
- Finding instantaneous velocity and rate of change using limits
- Feedback




function
$\lim_{x \to a} f(x) = L$
As you approach
a along the x-axis
What is the y-value getting
closer to?

Consider the function $f(x) = \frac{\sqrt{x+1}-1}{x}$. Its graph is shown here. The value of $\lim_{x \to 0} f(x)$ is



- 0, because plugging in x = 0 gives 0/0
- 1, because plugging in x = 0 gives 0/0
- Undefined, because plugging in x = 0 gives 0/0
- 0.5
- None of these

To 0

function

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

As you approach a along the x-axis

What is the y-value getting closer to?

x	-0.5	-0.1	-0.01	-0.001	0.001	0.01	0.1	0.5
f(x)	0.5857864376	0.5131670195	0.5012562893	0.5001250625	0.4998750625	0.4987562112	0.4880884817	0.4494897428

Connecting limits to rates of change
student.desmos.com

http://gvsu.edu/s/1zJ