TOPIC:
Numerical and Graphical Approach to Limits

Date:
9/1

Questions:

ES:

Notes

How do I find the limit of a function numerically and graphically?

What is a limit?

If function $f(x)$ becomes close to a single number **L** as x approaches **c**, then the limit of $f(x)$ as $x \to c$ is **L**:

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

Numerically - look at numbers near $x = 1$ from both sides

Find $\lim_{x \to 1} \frac{x^3 - 1}{x - 1}$

x	0.9	0.99	0.999	1	1.001	1.01	1.1
$f(x)$	2.710	2.970	2.997	?	3.003	3.030	3.310

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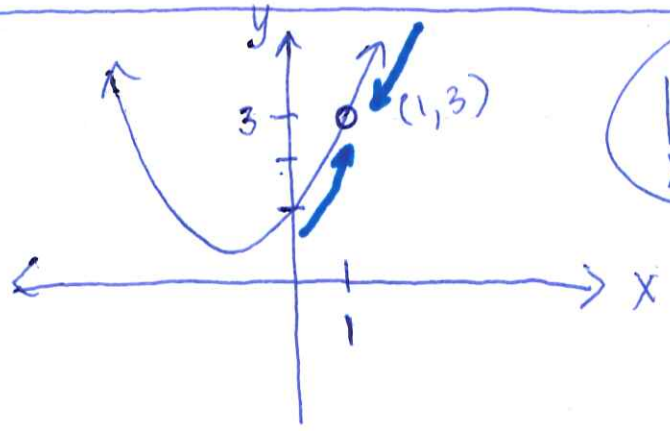
So $\lim_{x \to 1} \frac{x^3 - 1}{x - 1} = 3$

3 to 4 decimal places

Graphically - look at where the graph approaches $x = 1$ from both sides



$\lim_{x \to 1} \frac{x^3 - 1}{x - 1} = 3$

Summary