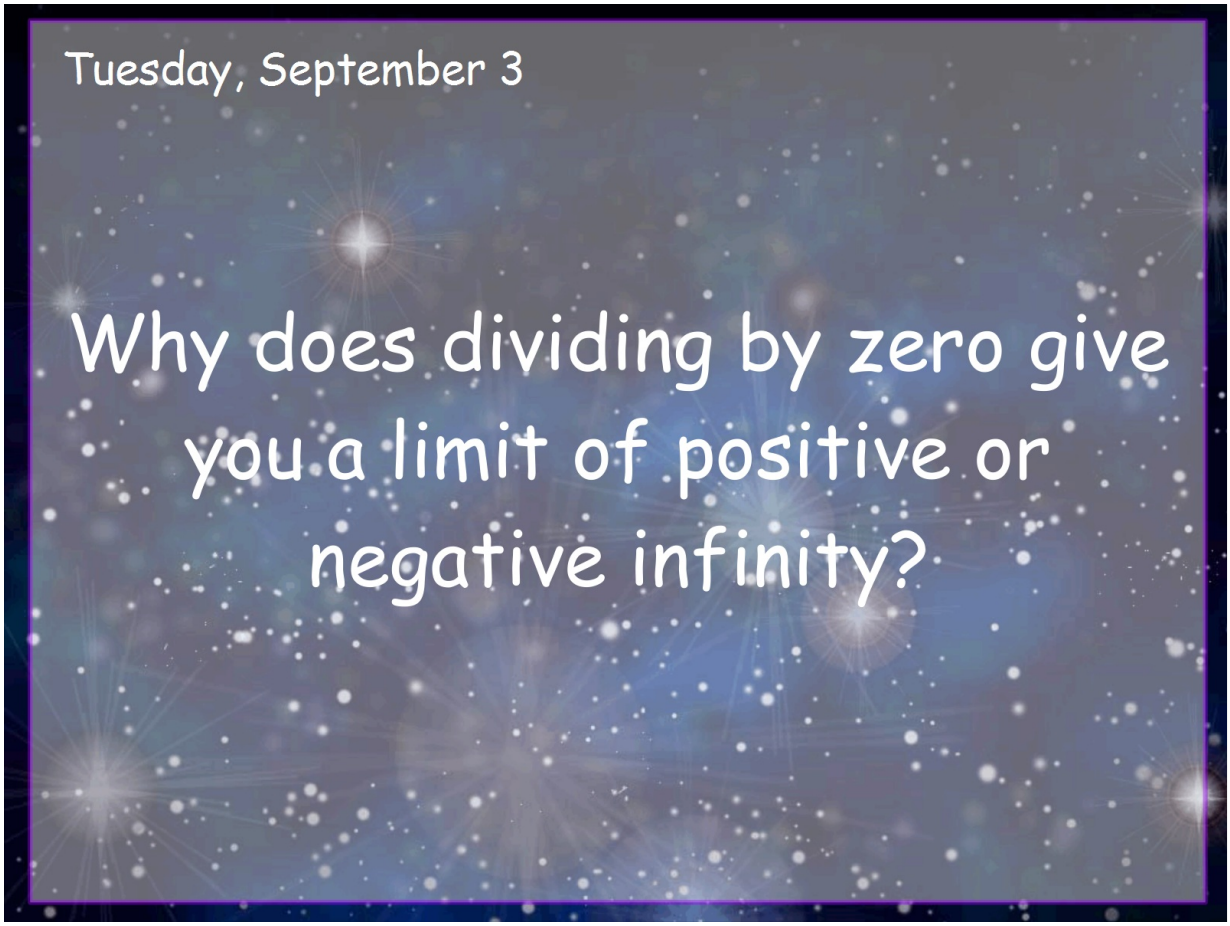

September 3 - Day 2

Students will verbally explain how to find the limit analytically, graphically and numerically

(using the words: evaluate, simplify, right, left...)

1. Given the function $f(x) = \dfrac{x^2 + 3x - 5}{x - 4}$

a. Create a table to find $\lim_{x \to 4^-} f(x)$

x	f(x)
0	
3	
3.1	
3.5	
3.9	
3.99	
3.999	

$\lim_{x \to 4^-} \dfrac{x^2+3x-5}{x-4} = -\infty$

$\lim_{x \to 4^+} \dfrac{x^2+3x-5}{x-4} = +\infty$

$\lim_{x \to 6^-} \dfrac{x^2-7x-10}{x-6} = +\infty$

$\lim_{x \to 6^+} \dfrac{x^2-7x-10}{x-6} = -\infty$

$\lim_{x \to 3^-} \dfrac{x+2}{(x-3)^2} = +\infty$

$\lim_{x \to 3^+} \dfrac{x+2}{(x-3)^2} = +\infty$

Numerator at $x=4$

$4^2+3(4)-5=23$

Denominator before $x=4$

$x = 3.9$

$3.9-4=-0.1$

$\dfrac{\text{positive}}{\text{negative}} = \text{negative}$

$$\lim_{x \to 2^-} \frac{4x^2-20}{x-2}$$

$$= \frac{4(2)^2-20}{2-2} = \frac{-4}{0}$$

→ dividing by zero, going to $\pm\infty$

top $= -4$

bottom $= 1.9-2 = -.1$

$\rightarrow \frac{\text{negative}}{\text{negative}} = \text{positive}$

$$\lim_{x \to 2^-} \frac{4x^2-20}{x-2} = +\infty$$