

JANUARY 27

What is the difference between the three fractions below?

$$Q = \frac{0}{c}$$

$$\frac{c}{0}$$

$$\frac{0}{0} = \text{indeterminate}$$

undefined

c is any constant.

JANUARY 28

Students will verbally explain how to evaluate indeterminate limits

(using the words:
factor, simplify, evaluate...)

$$\lim_{x \rightarrow 0} \frac{x^2}{x^2 - 3x}$$

$$= \frac{0^2}{0^2 - 3(0)} = \frac{0}{0} \quad //$$

factor & simplify

$$\frac{x^2}{x^2 - 3x} = \frac{x(x)}{x(x-3)} = \frac{x}{x-3}$$

$$\lim_{x \rightarrow 0} \frac{x^2}{x^2 - 3x} = \lim_{x \rightarrow 0} \frac{x}{x-3} = \frac{0}{0-3} = \frac{0}{-3} = 0$$

$$\lim_{x \rightarrow 0} \frac{x^2}{x^2 - 3x} = 0$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 5x + 6}{x - 2}$$

$$= \frac{2^2 - 5(2) + 6}{2 - 2} = \frac{4 - 10 + 6}{2 - 2} = \frac{0}{0} \quad //$$

factor & simplify

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

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

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

$$\lim_{x \rightarrow 8} \frac{x^3 - 64x}{x - 8} = \frac{8^3 - 64(8)}{8 - 8} = \frac{512 - 512}{8 - 8} = \frac{0}{0} \quad \text{" "}$$

factor + Simplify

$$\frac{x^3 - 64x}{x - 8} = \frac{x(x^2 - 64)}{x - 8} = \frac{x(x^2 + 0x - 64)}{x - 8} = \frac{x(x - 8)(x + 8)}{x - 8} = x(x + 8) = x^2 + 8x$$

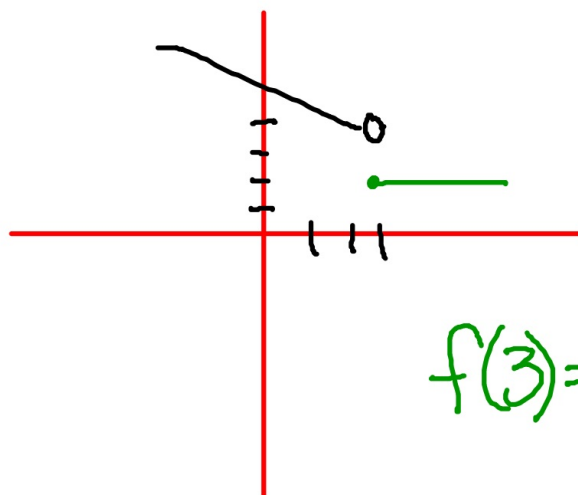
$$\lim_{x \rightarrow 8} \frac{x^3 - 64x}{x - 8} = \lim_{x \rightarrow 8} x(x + 8) = 8(8 + 8) = 128$$

$$\lim_{x \rightarrow 8} x^2 + 8x = 8^2 + 8(8) = 128$$

$$\lim_{x \rightarrow 8} \frac{x^3 - 64x}{x - 8} = 128$$

$$\lim_{x \rightarrow 3} f(x) = 4$$

$$f(3) = \text{undef}$$



$$f(3) = 2$$