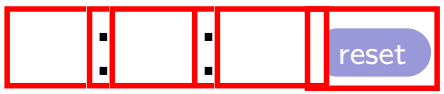
Bellwork 9/22

$$\text{Let } f(x) = \begin{cases} 2x - 3 & \text{if } x < 1 \\ \cos(\pi x) & \text{if } x \geq 1 \end{cases}$$

Does the Intermediate Value Theorem guarantee a solution to $f(x) = -0.25$ in the interval $(0, 2)$?

Why or why not?



Bellwork 9/22 - Solution

Exercise 1

Find the limits:

1. $\lim_{x \to \infty} \left(\frac{3x^3 - 7}{2x^3 - x + 1} \right)$
2. $\lim_{x \to \infty} \left(\frac{3x^2 - 7}{2x^3 - x + 1} \right)$

Exercise 1 - Solutions

Exercise 2

Find the limit:

$$\lim_{x \to -\infty} \left[\frac{1 + e^x \sin(x)}{e^{x-1} - 1} \right]$$

Exercise 2 - Solution

Exercise 3

Find the limit:

$$\lim_{x \to \infty} \left(\frac{3^x + 2}{e^{2x} + 1} \right)$$

Exercise 3 - Solution