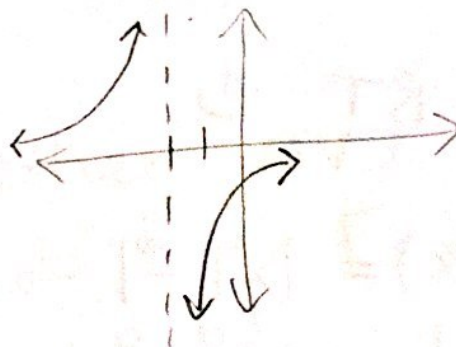


Ex 1) Determine if RT can be applied to f on $[a, b]$. Find c in (a, b) so $f'(c) = 0$

a) $f(x) = \frac{x^2 - 2x - 3}{x + 2}$ on $[-1, 3]$

$f(x) = \frac{(x-3)(x+1)}{x+2}$



① Continuous on $[-1, 3]$. ✓

② Differentiable on $[-1, 3]$. ✓

③ $f(a) = f(b)$

$f(-1) = f(3)$
 $0 = 0$ ✓

RT ☺

$f'(c) = 0 = \frac{(x+2)(2x-2) - (x^2 - 2x - 3)}{(x+2)^2}$

$0 = \frac{2x^2 - 2x + 4x - 4 - x^2 + 2x + 3}{(x+2)^2}$

$0 = \frac{x^2 + 4x - 1}{(x+2)^2}$

$x^2 + 4x - 1 = 0$
 $\frac{-4 \pm \sqrt{4^2 - 4(1)(-1)}}{2(1)}$
 $\frac{-4 \pm \sqrt{16+4}}{2} = \frac{-4 \pm 2\sqrt{5}}{2}$
 $= -2 \pm \sqrt{5}$

$c = -2 + \sqrt{5}$

↳ not in interval!