

Max of the function

We want to show for $x < 2$ ($x-2 < 0$)

$$\frac{x^2-3}{x-2} \leq 2$$

$$x^2 - 3 \geq 2(x - 2)$$

$$x^2 - 2x + 1 \geq 0$$

$$(x - 1)^2 \geq 0$$

For $x > 2$ ($x - 2 > 0$)

$$\frac{x^2-3}{x-2} \geq 6$$

$$x^2 - 3 \geq 6(x - 2), \quad x^2 - 3 \geq 6x - 12$$

$$x^2 - 6x + 9 \geq 0$$

$$(x - 3)^2 \geq 0$$

The Function $y = \frac{x^2-3}{x-2}$ meets $y = X$ (one point)

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

$$x^2 - 3 = x^2 - 2x$$

$$x = \frac{3}{2}, \quad y = X$$

$$y = \frac{3}{2}$$

$$B\left(\frac{3}{2}, \frac{3}{2}\right)$$

$$x = 0 \Rightarrow y = \frac{-3}{-2} = 1\frac{1}{2}$$

$$y = 0 \Rightarrow x^2 - 3 = 0$$

$$x^2 = 3$$

$$x = \pm\sqrt{3}$$

