

$$f(x) = x^3 - 3x^2 + 3$$

- Give all Turning Points
- Give all Points of Inflection
- Intervals of Increase / Decrease
- Intervals of Concave Up / Down
- JUSTIFY ALL ANSWERS!
- Sketch the Graph.

$$f(x) = x^3 - 3x^2 - 3$$

KEY

$$f'(x) = 3x^2 - 6x$$

$$3x^2 - 6x = 0$$

$$3x(x-2) = 0$$

$$x=0, 2$$

$$f''(x) = 6x - 6$$

$$6x - 6 = 0$$

$$6x = 6$$

$$x = 1$$



P.O.I. (1,1)



TP (0,3)

(2,-1)

Concave Down $(-\infty, 1)$

Concave Up $(1, \infty)$

BIC

Increasing $[-\infty, 0] \cup [2, \infty)$

Decreasing $[0, 2]$

