

10/11/16

PVA

$$1.)^a \quad s(t) = t^2 - 4t + 3$$

$$s(2) = (2)^2 - 4(2) + 3$$

$$= 4 - 8 + 3$$

$$s(2) = -1$$

$$1.)^b \quad f(0) = 0^2 - 4(0) + 3$$

$$f(0) = 3$$

$$f(4) = 4^2 - 4(4) + 3$$

$$f(4) = 3$$

$$1.)^c \quad s'(t) = 2t - 4$$

$$s'(4) = 8 - 4$$

$$s'(4) = 4$$

$$\text{AROC} = \frac{3-3}{4-0} = \frac{0}{4}$$

Rolle's Thm / MVT

$$1.)^d \quad s''(t) = 2$$

So... 2

$$1.)^e \quad 2t - 4 = \frac{0}{4}$$

$$2t = 4$$

$$t = 2 \quad (2, -1)$$

EXAMPLE: $x(t) = t^3 - 4t + 3$

- $t \geq 0$
- FIND VELOCITY
- FIND ACCEL.
- DESCRIBE MOTION

$$x'(t) = 3t^2 - 4$$

$$x''(t) = 6t$$

$$x'(t) = 3t^2 - 4 \quad x''(t) = 6t$$

$$x'(0) = -4 \quad x''(0) = 0 \quad \text{P.O.I}$$

$x(t) = t^3 - 4t + 3$ @ $x \geq 0$ accelerates $(0, \infty)$
 has \uparrow maximum negative velocity @ 0

$$t \geq 0$$

Example: $b(t) = 6 - 2t - t^2$

$$b'(t) = -2 - 2t \quad b(0) = 6$$

$$b''(t) = -2$$

$$b'(0) = -2$$

$$b''(0) = -2$$

@ $x=0$ position 6 and decreasing thereafter.

$$b'(t) = -2 - 2t = 0 \Rightarrow t = -1$$
$$b''(t) = -2 < 0$$

$$t = -1$$

EXAMPLE: $x(t) = t^3 - 2t + 3$

Find velocity and acceleration

$$x'(t) = 3t^2 - 2$$
$$x''(t) = 6t$$

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

has a maximum velocity @ $t=0$