March 8

Study Session
Tuesday 3/12
at 1:00

SWBAT:

Interpret the first and second derivatives of parametric functions

$x(t) = t^2 + 2t$

$y(t) = t^2 - 2t + 3$

find the left most point

$x'(t) = 2t + 2$

$0 = 2t + 2$

$-1 = t$

cp		-1	
sign x'		−	+
direction		left	right

leftmost point when $t=-1$

$x(-1) = -1$ at $(-1, 6)$

$y(-1) = 6$

find the lowest point

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

$0 = 2t - 2$

$t = 1$

$y''(t) = 2$

$y''(1) = 2$

$y''(1) > 0$, $y(t)$ is concave up

so $y(1)$ is a minimum

low point when $t=1$ at $(3, +2)$

horizontal tangent lines

slope = 0

$$\text{slope} = \frac{dy}{dx} = \frac{\frac{dy}{dt}}{\frac{dx}{dt}}$$

when $\frac{dy}{dt} = 0$

vertical tangent lines

when $\frac{dx}{dt} = 0$

slope is undefined $\left(\frac{\#}{0}\right)$