

1. Sketch the curve defined by the parametric equations

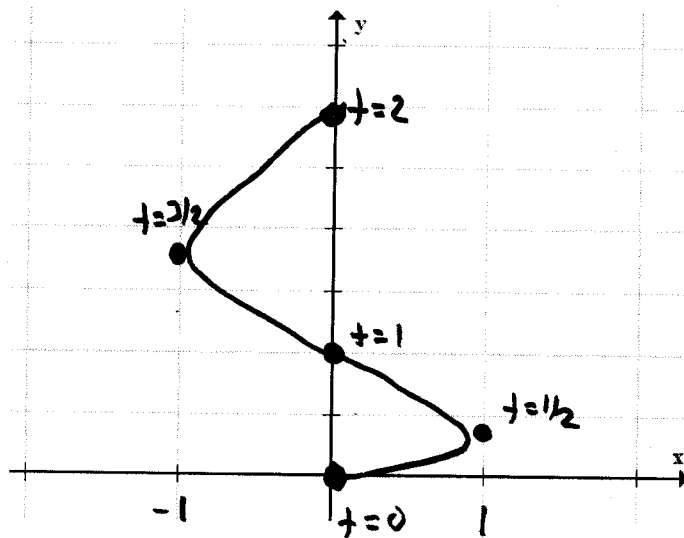
$$x = \sin(\pi t), \quad y = t^2 + t, \quad 0 \leq t \leq 2$$

by using 5 t -values. Start at $t = 0$ and increase by $1/2$.

(a) Make a T -table.

(b) Sketch

t	x	y
0	0	0
$1/2$	1	$3/4$
1	0	2
$3/2$	-1	$3/4$ 3.75
2	0	6



2. Find $\frac{dy}{dx} = \frac{\frac{dy}{dt}}{\frac{dx}{dt}} = \frac{2t+1}{\pi \cos(\pi t)}$

3. Find an equation of the tangent line on $x = \sin(\pi t), y = t^2 + t$ at the point $(0, 2)$

← OCCURS WHEN $t=1$

SLOPE: $\left. \frac{dy}{dx} \right|_{t=1} = \frac{2(1)+1}{\pi \cos(\pi)} = \frac{3}{-\pi}$

POINT: $(0, 2)$

LINE: $y - 2 = \frac{-3}{\pi}(x - 0)$

$$y = \frac{-3}{\pi}x + 2$$