D 32

$(-3, 6)$ to $(2, -4)$ $\quad \Delta x = 5$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4-6}{2-(-3)} = \frac{-10}{5} = -2$

$x(t) = x_1 + bt$

$y(t) = y_1 + at$

$m = \frac{a}{b} \quad 0 \le t \le$

#1

$x = -3 + 1t$

$y = 6 - 2t \quad 0 \le t \le 5$

#2

$x = -3 + 5t$

$y = 6 - 10t \quad 0 \le t \le 1$

B 31 Part I

$x(t) = 3\sin t \quad y(t) = 2\cos t$

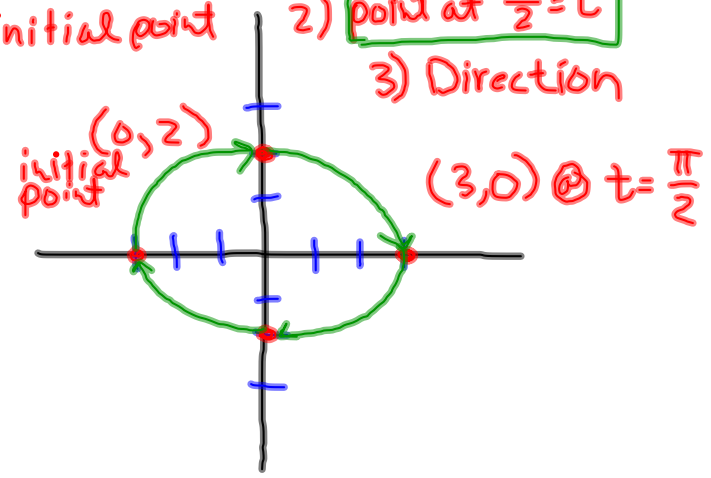
$0 \le t \le 2\pi$

t	x	y
0	0	2
$\pi/2$	3	0
π	0	-2
$\frac{3\pi}{2}$	-3	0
2π	0	2

1) initial point

2) point at $\frac{\pi}{2} = t$

3) Direction



Part II

$x = 3\sin t \quad y = 2\cos t$

$\frac{x}{3} = \sin t \quad \frac{y}{2} = \cos t$

$\sin^2 t + \cos^2 t = 1$

$\left(\frac{x}{3}\right)^2 + \left(\frac{y}{2}\right)^2 = 1$

$36 \cdot \left(\frac{x^2}{9} + \frac{y^2}{4}\right) = 1 \cdot 36$

$4x^2 + 9y^2 = 36$

Ellipses

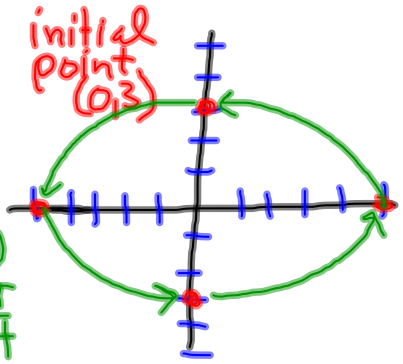
#31

$x(t) = -5\sin 2t \quad y(t) = 3\cos 2t$

$0 \le t \le \pi$

$t = \frac{\pi}{4}$

t	x	y
0	0	3
$\pi/4$	-5	0
$\pi/2$	0	-3
$3\pi/4$	5	0
π	0	3



$x = -5\sin 2t \quad y = 3\cos 2t$

$x = -5\sin\theta \quad y = 3\cos\theta \quad$ let $\theta = 2t$

$\frac{x}{-5} = \sin\theta \quad \frac{y}{3} = \cos\theta$

$\sin^2\theta + \cos^2\theta = 1$

$\left(\frac{x}{-5}\right)^2 + \left(\frac{y}{3}\right)^2 = 1$

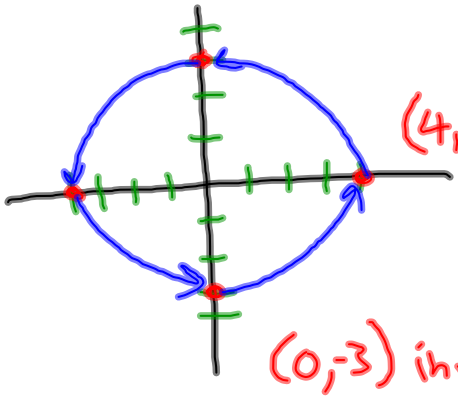
P 31

$x(t) = 4\sin 2\pi t \quad y(t) = -3\cos 2\pi t$

$0 \le t \le 1$

t	x	y
0	0	-3
1/4	4	0
1/2	0	3
3/4	-4	0
1	0	-3

$t = \frac{1}{4}$



(4,0) @ $t = \frac{1}{4}$

(0,-3) initial point

Let $\theta = 2\pi t$

$x = 4\sin\theta \quad y = -3\cos\theta$

$\frac{x}{4} = \sin\theta \quad \frac{y}{-3} = \cos\theta$

$\sin^2\theta + \cos^2\theta = 1$

$\left(\frac{x}{4}\right)^2 + \left(\frac{y}{-3}\right)^2 = 1$

#32

$(-1,-4)$ to $(3,12)$ $\quad \Delta x = 4$

$m = \frac{12-(-4)}{3-(-1)} = \frac{16}{4} = 4$

$x = -1 + 2t$

$y = -4 + 8t \quad 0 \le t \le 2$