Math 271A Multivariable Calc HW 1

What got graded: § 11.1 # 9, 19, 26

(9) (a) Sketch the curve

$$x = \sqrt{t}\ , \quad y = 1 - t$$

by plotting points.

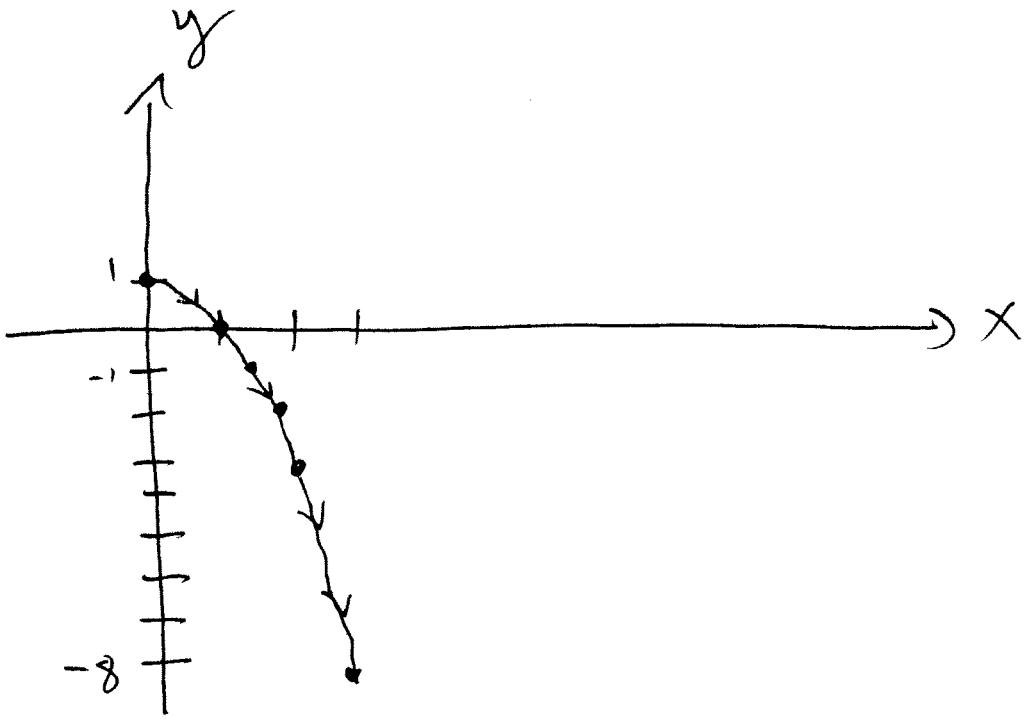
(b) Eliminate the parameter & find the Cartesian eqn of the curve.

Soln:

(a)

t	x	y
0	0	1
1	1	0
2	$\sqrt{2}$	-1
3	$\sqrt{3}$	-2
4	2	-3
9	3	-8

t can't be negative b/c of the square root



(b) $t = 1 - y$ and $x = \sqrt{t}$

$t = 1 - y$ and $x^2 = t$

$x^2 = 1 - y$

$$\boxed{y = 1 - x^2}$$

(19) Describe the motion of the curve

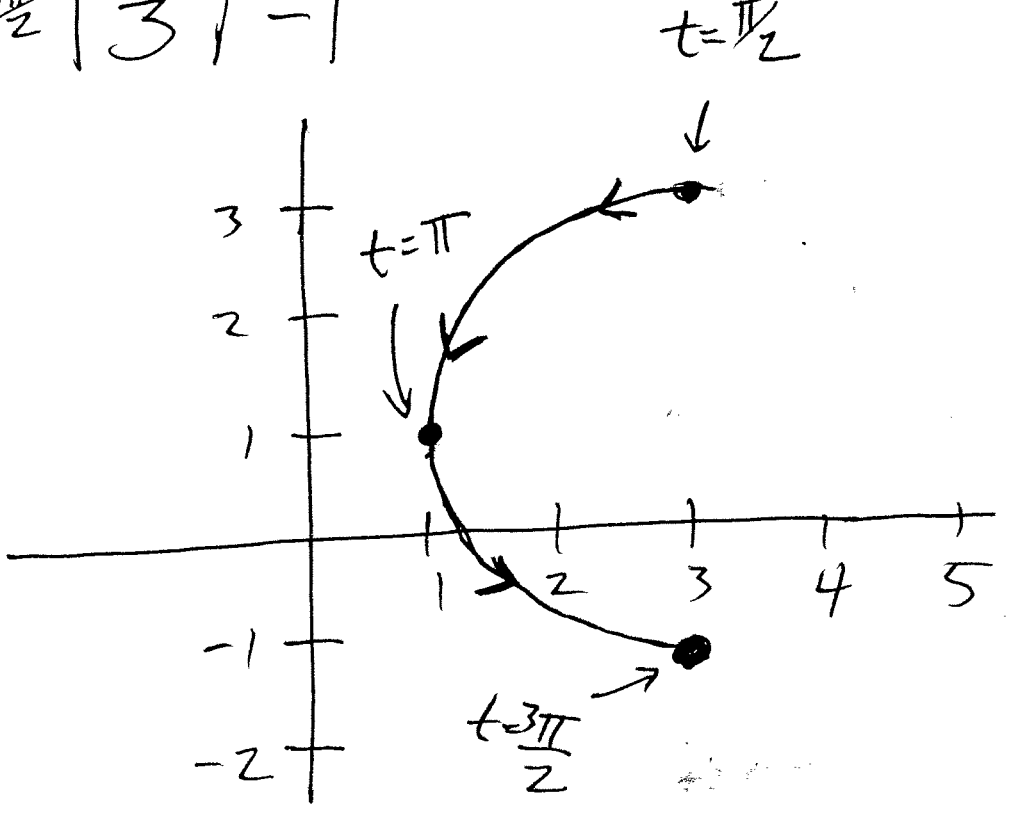
$x = 3 + 2\cos t$

$y = 1 + 2\sin t$

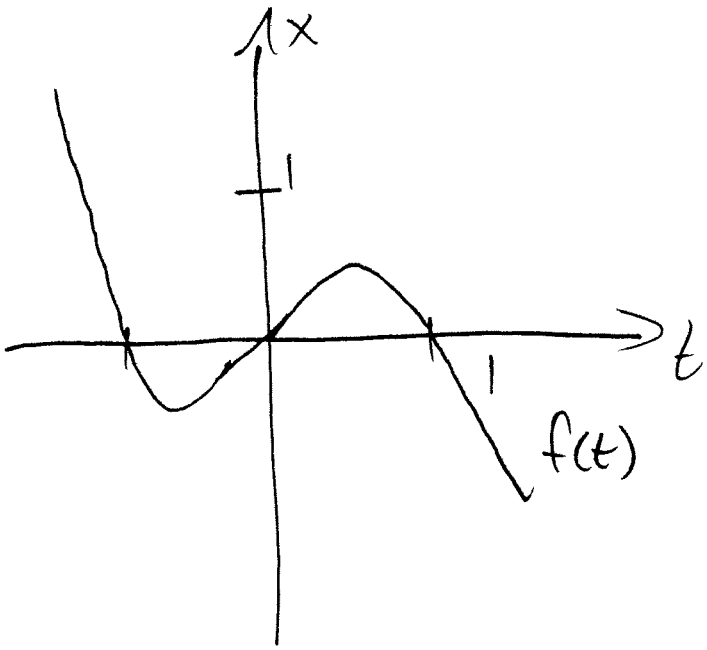
$\frac{\pi}{2} \le t \le \frac{3\pi}{2}$

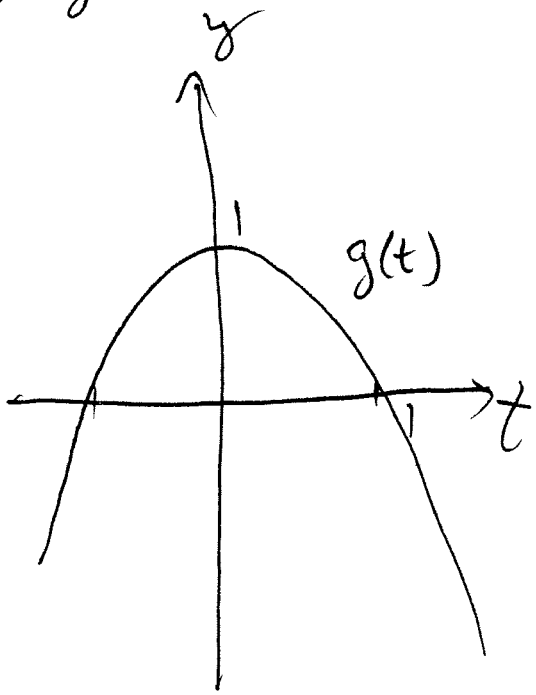
Soln: This is a portion of the circle w/ center (3,1) and radius 2. To find out what portion of the circle it is, plug in points

t	x	y
$\frac{\pi}{2}$	3	3
π	1	1
$\frac{3\pi}{2}$	3	−1



26 Use the graphs to sketch the curve $x = f(t)$ $g(t) = y$





Solution: Plot some points

t	x	y
-1	0	0
$-\frac{1}{2}$	$-\frac{1}{2}$	$\frac{1}{2}$
0	0	1
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
1	0	0