Calculus Section 10.2 Graphing Parametric Equations and Eliminating the Parameter

Homework: page 703 #'s 1 – 15 odd

Make a table of values and sketch the curve, indicating the direction of your graph. Then, eliminate the parameter.

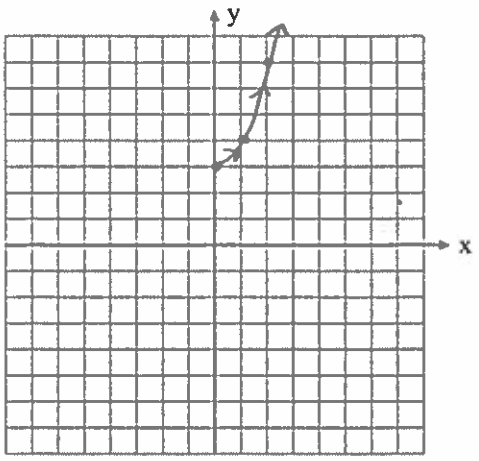
(a) $x=\sqrt{t-1}$, $y=t+2$

t	1	2	5	10
x	0	1	2	3
y	3	4	7	12

$x=\sqrt{t-1}$. $y=t+2$

$x^2=t-1$ $y=(x^2+1)+2$

$t=x^2+1$ $y=x^2+3$



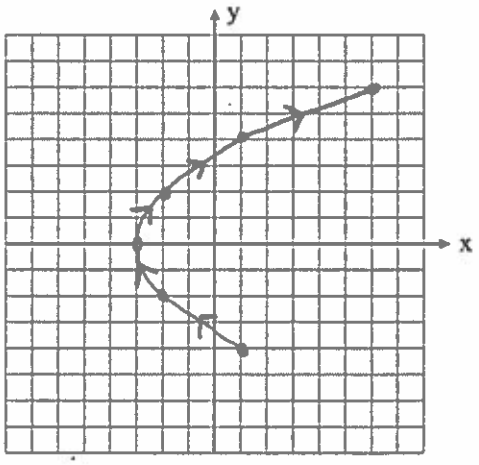
(b) $x=t^2-3$ and $y=2t$, $-2\le t\le 3$

t	-2	-1	0	1	2	3
x	1	-2	-3	-2	1	6
y	-4	-2	0	2	4	6

$y=2t$ $x=t^2-3$

$t=\frac{1}{2}y$ $x=(\frac{1}{2}y)^2-3$

$x=\frac{1}{4}y^2-3$



(c) $x=3+2\cos t$, $y=-1+3\sin t$

t	0	$\pi/2$	π	$\frac{3\pi}{2}$	2π
x	5	3	1	3	5
y	-1	2	-1	-4	-1

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

$x=3+2\cos t$ $y=-1+3\sin t$

$x-3=2\cos t$ $y+1=3\sin t$

$\frac{x-3}{2}=\cos t$ $\frac{y+1}{3}=\sin t$

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

$\frac{(x-3)^2}{4}+\frac{(y+1)^2}{9}=1$