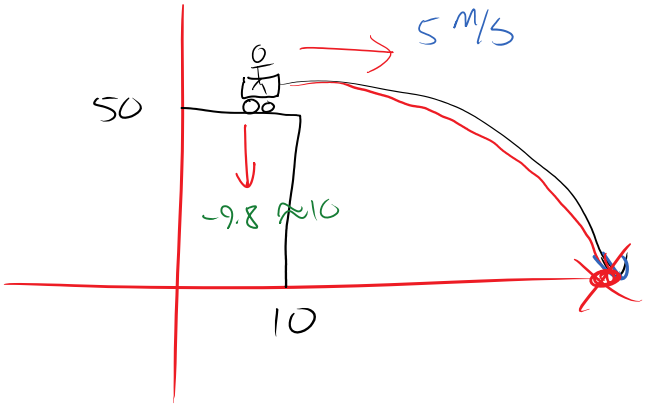
Monday, March 21, 2016 10:04 AM

Parametric Equations



$x = 5t + 10$

$y = -5t^2 + 50$

$t = \frac{1}{5}x - 2$

$y = -5\left(\frac{1}{5}x - 2\right)^2 + 50$

Parabola

(1) $x = 1 - 2t \Rightarrow t = -\frac{1}{2}x + \frac{1}{2}$

$y = 2 - t$

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

$y = \frac{1}{2}x + \frac{3}{2}$

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

$x = 1 + 2y - 4$

$y = \frac{1}{2}x + \frac{3}{2}$

Line

(2) $x = 2 + t \Rightarrow t = x - 2$

$y = 5 + 10t - t^2$

$y = 5 + 10(x-2) - (x-2)^2$

$= 5 + 10x - 20 - (x^2 - 4x + 4)$

$y = -x^2 + 14x - 19$ Parabola

$\star$ $\boxed{y = -x^2 + 14x - 19}$ $\star$ Parabola

(3) $x = 3 + 6t$ $\quad -2 \le t \le 5$

$y = t$

$x = 3 + 6y$

$\boxed{y = \frac{1}{6}x - \frac{1}{2}}$

$(-9, -2)$ to $(33, 5)$

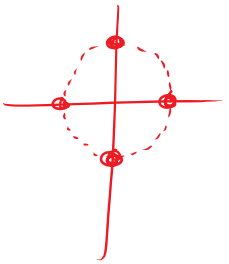
t	x	y
-2	-9	-2
5	33	5

points

(4) $x = 2\sin t$

$y = 2\cos t$

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



$x^2 + y^2 = (2\sin t)^2 + (2\cos t)^2$

$= 4\sin^2 t + 4\cos^2 t$

$= 4(\sin^2 t + \cos^2 t)$

$\boxed{x^2 + y^2 = 4}$ Circle