

6.3 Parametric Equations & Motion

- Obj: 1. Define & graph parametric eqs.
 2. Solve problems.

Parametric equations:

- always come in pairs
- dependent on t .

$$x = f(t)$$

$$y = g(t)$$

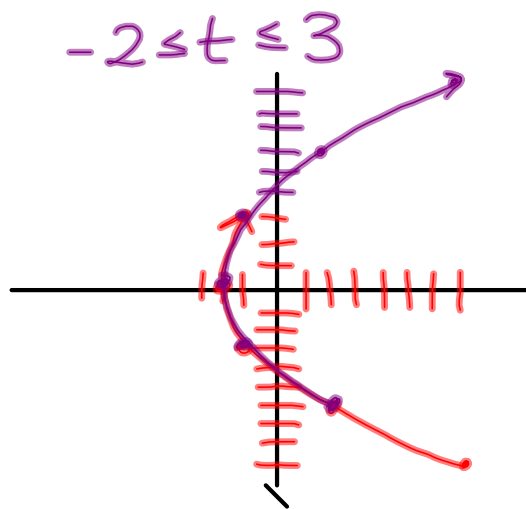
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Graph the equations over the interval $-3 \leq t \leq 1$

$$x = t^2 - 2$$

$$y = 3t$$

x	y	t
7	-9	-3
2	-6	-2
-1	-3	-1
-2	0	0
-1	3	1
2	6	2
7	9	3



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get rid of t

Eliminate the parameter & identify the graph:

graph: $\begin{cases} x = 1 - 2t \\ y = 2 - t \end{cases}$ parametric notation

1. Solve for t in the 1st eq.

$$x = 1 - 2t$$

$$\begin{matrix} - & - \\ -1 & -1 \end{matrix}$$

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

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

2. Plug t value into the 2nd eq.

$$y = 2 - t$$

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

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

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

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Eliminate the parameter & graph:

$$x = 1 + t \rightarrow t = x - 1$$

$$y = t$$

$$y = x - 1$$

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