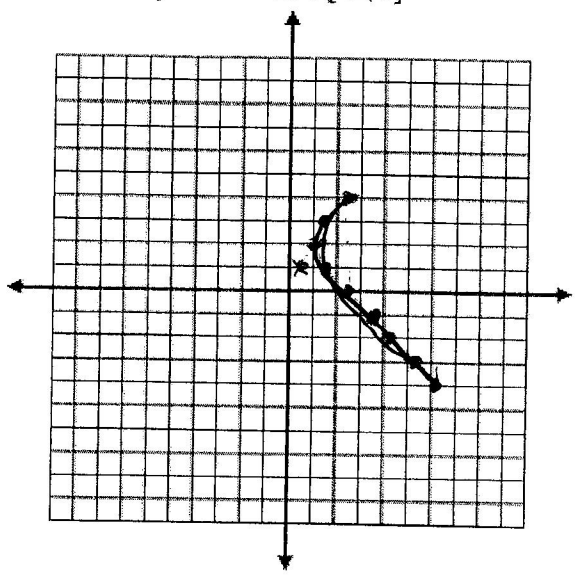
1. Fill in the table, plot the points, and sketch the parametric equation for t [-2,6]

$x = \sqrt{t^2 + 1}$

$y = 2 - t$

t	x	y
-2	$\sqrt{5}$	4
-1	$\sqrt{2}$	3
0	1	2
1	$\sqrt{2}$	1
2	$\sqrt{5}$	0
3	$\sqrt{10}$	-1
4	$\sqrt{17}$	-2
5	$\sqrt{26}$	-3
6	$\sqrt{37}$	-4



In Exercises 2-7, eliminate the parameter t and identify the graph.

2. $x = 3 - 5t, y = 4 + 3t$

$y = -\frac{3}{5}x + \frac{29}{5}$

line

$m = -\frac{3}{5}$ $b = \frac{29}{5}$

3. $x = 4 + t, y = -8 - 5t, \ -3 \le t \le 5$

$y = -5x + 2$

line segment with endpts (1,7) & (9,-33)

4. $x = 2t^2 - 3, y = t - 1$

$x = 2(y+1)^2 - 3$

parabola opens right

5. $x = 3\cos t, y = 3\sin t$

$x^2 + y^2 = 9$

Circle

C (0,0) r = 3

6. $x = e^{2t} - 1, y = e^t$

$y = \sqrt{x+1}$

root function

7. $x = t^3, y = \ln t, t > 0$

$y = \ln \sqrt[3]{x}$

Nat. log function

In Exercises 8-9, find a parametrization for the curve. * answers may vary *

8. The line through the points (–1, –2) & (3, 4)

$x = -1 + 4t$

$y = -2 + 6t$

9. The line segment with endpoints (–2, 3) and (5, 1)

$x = -2 + 7t$

$y = 3 - 2t$

$0 \le t \le 1$

10. Stewart shoots an arrow straight up from the top of a building with initial velocity of 245 ft /sec. The arr leaves from a point 200 ft above level ground.

(a) Write an equation that models the height of the arrow as a function of time t. $s(t) = -16t^2 + 245t + 200$

(b) Use parametric equations to simulate the height of the arrow.

(c) Use parametric equations to graph height against time.

(d) How high is the arrow after 4 sec? 924 ft

(e) What is the maximum height of the arrow? When does it reach its maximum height? 1137.89 ft 7.66 sec

(f) How long will it be before the arrow hits the ground? 16.1 sec

11. Gretta and Lois are launching yard darts 20 ft from the front edge of a circular target of radius 18 in. If Gretta releases the dart 5 ft above the ground with an initial velocity of 20 ft/sec and at a 50° angle with the horizontal, will the dart hit the target? no — it hits ground around 11.6 ft