

Example 2: Plot the curve that is represented parametrically by the equations

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$$x = t^2 + t \quad \text{and} \quad y = 3 - t$$

on the interval $-2 \leq t \leq 2$.

```
> restart ;
```

```
> with(plots) :
```

```
> f := t -> t^2 + t ;
```

$$f := t \rightarrow t^2 + t \quad (1)$$

```
> g := t -> 3 - t ;
```

$$g := t \rightarrow 3 - t \quad (2)$$

```
> a := -2 ;
```

$$a := -2 \quad (3)$$

```
> b := 2 ;
```

$$b := 2 \quad (4)$$

```
> Subints := 20 ;
```

$$\text{Subints} := 20 \quad (5)$$

```
> h := (b-a)/Subints ;
```

$$h := \frac{1}{5} \quad (6)$$

```
> printf("\n      i      t      x      y\n -----\n -----\n"): 
```

```
for i from 0 to Subints do
```

```
  T[i] := a + h*i:
```

```
  X[i] := f(T[i]):
```

```
  Y[i] := g(T[i]):
```

```
  printf(" %4d %7.2f %12.7f %12.7f\n", i, T[i], X[i], Y[i])
```

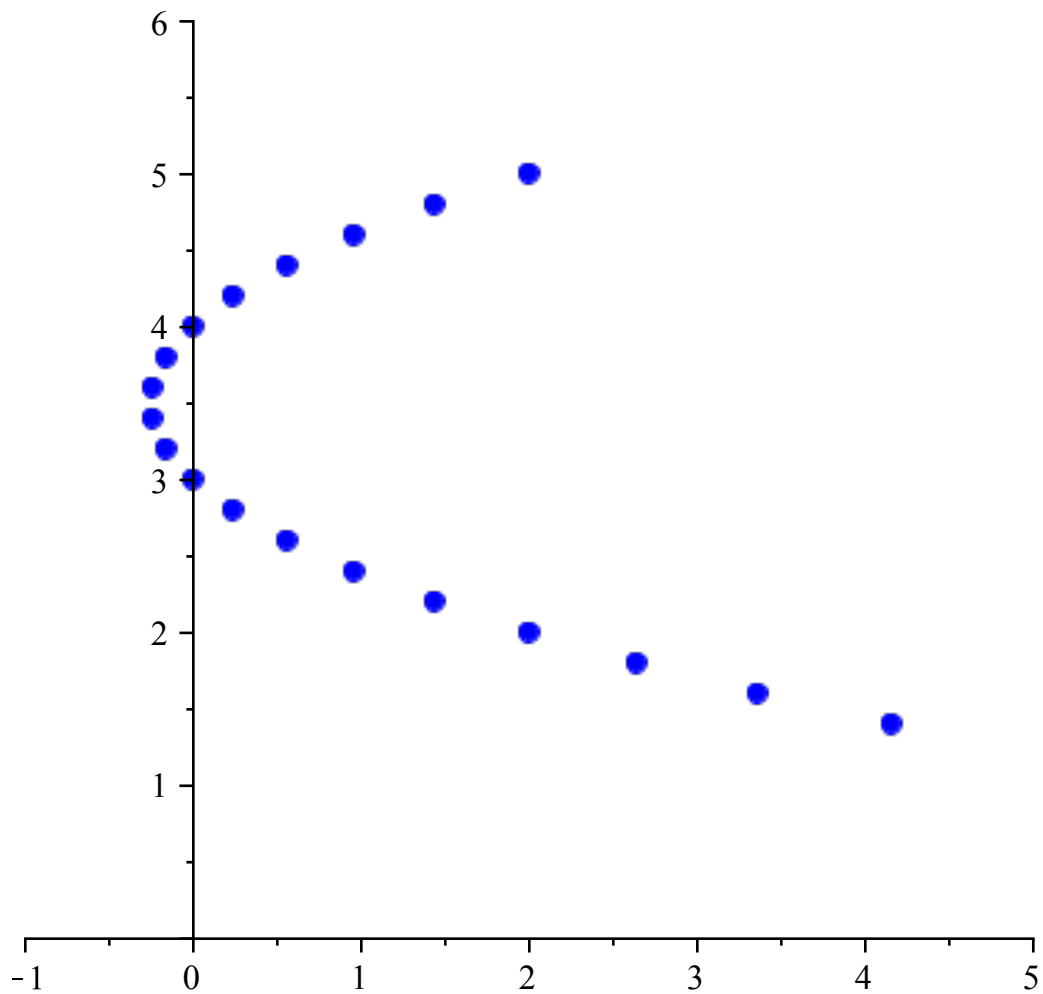
```
:
```

```
od:
```

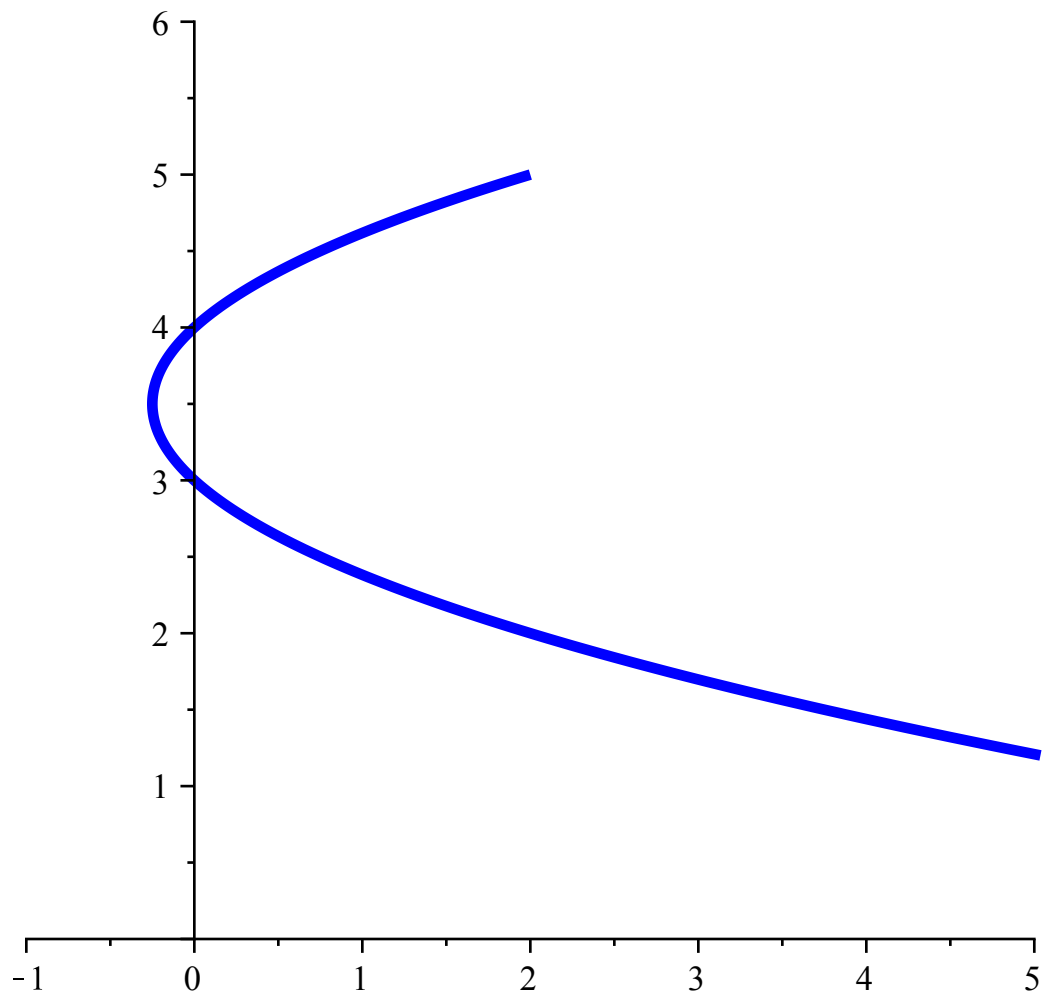
i	t	x	y
0	-2.00	2.0000000	5.0000000
1	-1.80	1.4400000	4.8000000
2	-1.60	0.9600000	4.6000000
3	-1.40	0.5600000	4.4000000
4	-1.20	0.2400000	4.2000000
5	-1.00	0.0000000	4.0000000
6	-0.80	-0.1600000	3.8000000
7	-0.60	-0.2400000	3.6000000

```
8 -0.40 -0.2400000 3.4000000
9 -0.20 -0.1600000 3.2000000
10 0.00 0.0000000 3.0000000
11 0.20 0.2400000 2.8000000
12 0.40 0.5600000 2.6000000
13 0.60 0.9600000 2.4000000
14 0.80 1.4400000 2.2000000
15 1.00 2.0000000 2.0000000
16 1.20 2.6400000 1.8000000
17 1.40 3.3600000 1.6000000
18 1.60 4.1600000 1.4000000
19 1.80 5.0400000 1.2000000
20 2.00 6.0000000 1.0000000
```

```
> plot( [[ f(T[k]), g(T[k]) ]$k = 0 .. Subints ], style=point,  
symbol=solidcircle, symbolsize=16, color=blue, view=[-1..5,0..6]  
);
```



```
> plot( [ f(t), g(t), t = a .. b ], color = blue, thickness = 4,  
view=[-1..5,0..6] );
```



Create the animation to see the curve's growth and its direction:

```
> animatecurve([ f(t),g(t), t = a .. b], frames=50, color=blue,  
thickness=4, numpoints=200, view=[-1..5,0..6] );
```