4

Parametric aplet

About the Parametric aplet

The Parametric aplet allows you to explore parametric equations, in which both *x* and *y* are defined as functions ons of *t*. They take the forms
$x = f(t)$ and $y = g(t)$.

Getting started with the Parametric aplet

The following example uses the parametric equations

$x(t) = 3\sin t$
$y(t) = 3\cos t$

Open the Parametric aplet

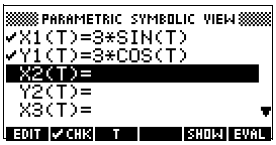
1. Open the Parametric aplet.

   APLET *Select*
   Parametric
   START

Define the expression

2. Highlight a line and enter the expressions.

   3 * SIN X,T,θ)
   ENTER
   3 * COS X,T,θ)
   ENTER

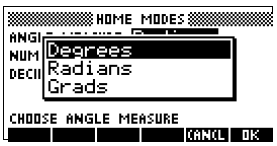


   Note: As parametric functions are paired, make sure both functions are checked.

Set angle measure

3. Set the angle measure to degrees.

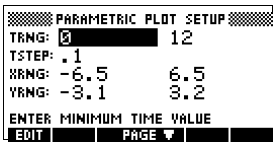
SHIFT *MODES*
CHOOS
Select Degrees **OK**



Set up the plot

4. Display the graphing options.

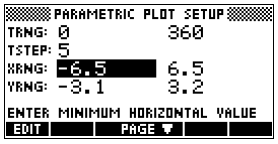
SHIFT *PLOT*



You can see the Plot Setup input form has two fields not included in the Function aplet, TRNG and TSTEP. TRNG specifies the *t* values. TSTEP specifies the step value between *t* values.

5. Set the TRNG and TSTEP so that *t* steps from 0° to 360° in 5° steps.

▶ 360 **OK**
5 **OK**

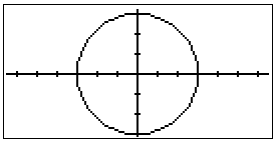


Plot the expression

6. Plot the expression.

PLOT

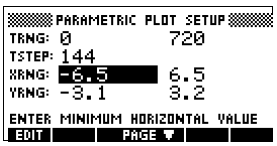
MENU



Overlay plot

7. Plot a star graph over the existing circle graph.

SHIFT *PLOT*
▶ 720 **OK**
144 **OK**

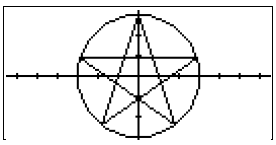


VIEWS

Select `Overlay Plot`

OK

MENU



A star is displayed instead of the circle (without changing the equation) because the changed value of `TSTEP` ensures that points being plotted are 144° apart instead of nearly continous. The `TRNG` of 720° makes it go around twice, completing the full star.

You are able to explore the graph using trace, zoom, split screen, and scaling functionality available in the Function aplet. See “Exploring the graph” on page 2-42 for further information.

Display the numbers

8. Display the table of numeric values.

NUM

T	X1	Y1
0	0	0
.1	.8865606	.7788367
.2	1.693927	1.434712
.3	2.349981	1.864078
.4	2.79611?	1.999147
.5	2.992485	1.818595

0

ZOOM | | | BIG | DEFN |

You can see there is a column in the table representing T-values.

This column is active in the sense that you can highlight a t-value, type in a replacement value, and see the table jump to that value. You can also zoom in or zoom out on any T-value in the table.

You are able to explore the table using ZOOM, GOTO, build your own table, and split screen functionality available in the Function aplet. See “Exploring the table of numbers” on page 2-52 for further information.