

Chapter 3 / **Example 29****Finding complex roots of a polynomial**

Given that $1 + 3i$ is a complex zero of the polynomial $f(x) = x^3 - 5x^2 + 16x - 30$, find all the other zeros of f .

Check your answers using a calculator.

Press **[APPS]** :PlySmlt2

Press **[enter]** to enter the main menu and select 1:POLYNOMIAL ROOT FINDER.

Select order 3 and select type a+bi.

Leave the other options as they are.

```

POLY ROOT FINDER MODE
ORDER  1 2 3 4 5 6 7 8 9 10
REAL   a+bi re^(θi)
DEC    FRAC
NORMAL SCI ENG
FLOAT  0 1 2 3 4 5 6 7 8 9
RADIAN DEGREE
[MAIN] [HELP] [NEXT]
  
```

Press **[f5]** NEXT.

Enter the coefficients: 1, -5, 16 and -30.

```

a3x3+a2x2+a1x+a0=0
a3=1
a2=-5
a1=16
a0=-30
[MAIN] [MODE] [CLEAR] [LOAD] [SOLVE]
  
```

Press **[f5]** SOLVE.

The calculator shows the roots: $1 - 3i$, $1 + 3i$ and 3.

```

a3x3+a2x2+a1x+a0=0
x1=1+3i
x2=1-3i
x3=3
[MAIN] [MODE] [COEFF] [STORE] [F<D]
  
```