MATLAB Command Window

>> help roots

ROOTS Find polynomial roots.

ROOTS(C) computes the roots of the polynomial whose coefficients are the elements of the vector C. If C has N+1 components, the polynomial is C(1)*X^N + ... + C(N)*X + C(N+1).

See also POLY, RESIDUE, FZERO.

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Example Find the roots of $z^2 - z + 1$

```
>> c = [1, -1, 1];    %  coefficients of z^2 – z + 1
>> roots(c)

ans =

  0.5000 + 0.8660i
  0.5000 - 0.8660i
```

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Now, the polynomial can be re-written as

$$z^2 - z + 1 = \left[z - (0.5 + j0.866)\right]\left[z - (0.5 - j0.866)\right]$$