# To-find-poles-and-zeros

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Given a Signal flow diagram or the Difference equation we **need** the *a* and *b* coefficients.

Signal flow diagram example:

Diagram, schematic

Description automatically generated

Difference equation example (not the same system as shown in the Signal flow diagram example) :



Steps in MATLAB:

We want to find out the ***a*** and ***b*** coefficients so we can declare them like shown below:

(We are using random *a* and *b* values below)

**b = [1 0.68346 0.64]**

**a = [1 0.54098 0.09]**

Then use the *roots* function to automatically find the roots, which are where the poles and zeros of the system are.

**zeros = roots(b)**

**poles = roots(a)**