

ME 1020 Engineering Programming with MATLAB

Problem 4.2:

2. The roots of the quadratic equation $ax^2 + bx + c = 0$ are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- a. Develop a pseudocode description of a program to compute both roots given the values of a , b , and c . Be sure to identify the real and imaginary parts.
- b. Write the program described in part a and test it for the following cases:
 1. $a = 2, b = 10, c = 12$
 2. $a = 3, b = 24, c = 48$
 3. $a = 4, b = 24, c = 100$

```
% Problem 4.2
clear
clc
disp('Problem 4.2: Scott Thomas')

% Input coefficients
a = [2 3 4]
b = [10 24 24]
c = [12 48 100]

x1 = (-b + sqrt(b.^2 - 4*a.*c))./(2*a)
x2 = (-b - sqrt(b.^2 - 4*a.*c))./(2*a)
```

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```
a =
     2     3     4

b =
    10    24    24

c =
    12    48   100

x1 =
   -2.0000   -4.0000  -3.0000 + 4.0000i

x2 =
   -3.0000   -4.0000  -3.0000 - 4.0000i
```