
EN3143: Electronic Control Systems

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Submitted Date: September 27, 2021
Exercise Number: 1

MATLAB implementation

```
clc;
close all;

num_1 = [2 5 3 6];
den_1 = [1 6 11 6];

[r1,p1,k1] = residue(num_1,den_1)

num_2 = [0 1 2 3];
den_2 = [1 3 3 1];

[r2,p2,k2] = residue(num_2,den_2)
```

Figure 1: MATLAB implementation for Problem 1 and Problem 2

```
r1 =

    -6.0000
    -4.0000
     3.0000

p1 =

    -3.0000
    -2.0000
    -1.0000

k1 =

     2
```

Figure 2: MATLAB implementation results for Problem 1

```
r2 =

     1.0000
     0.0000
     2.0000

p2 =

    -1.0000
    -1.0000
    -1.0000

k2 =

     []
```

Figure 3: MATLAB implementation results for Problem 2