ECE 2017

16BMD0016
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# TASK-3

## Q1 Create a transfer function for the H(s)

- using the polynomial as the vector
- using the transfer function as the rational expresiion of laplace variable 's'.

**Code:**

```
clc
clear all
close all
num = [0 1 0];
den = [1 2 10];
H = tf(num,den)
%s=tf('s');
%h=s/(s^2+2*s+10)
```

**Output:**

```
sys =

        s
  --------------
  s^2 + 2 s + 10

Continuous-time transfer function.


h =

        s
  --------------
  s^2 + 2 s + 10

Continuous-time transfer function.
```

## Q2 create the ZPK model for H(s)= -2s/(s-2)(s^2-2s+2) and plot it.

**Code:**

```
clc
clear all
close all
s=tf('s');
H=-2*s/((s-2)*(s^2-2*s+2));
sys = zpk(H);
p = pole(sys);
[z,gain]=zero(sys)
pzmap(sys);
```

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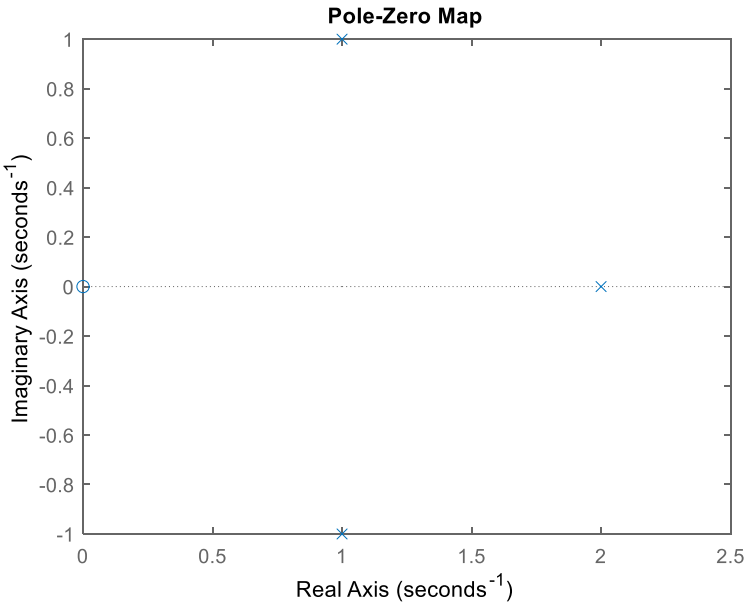
**Output:**

```
H =

          -2 s
  ---------------------
  s^3 - 4 s^2 + 6 s - 4

Continuous-time transfer function.
```

```
p =

   2.0000 + 0.0000i
   1.0000 + 1.0000i
   1.0000 - 1.0000i
```

```
z =

     0


gain =

    -2
```




## Q3 create an frequency response data model for the given data

**Code:**

```
clc
clear all
close all
sys=frd([0.0021+0.0009i 0.0027+0.0029i 0.0044+0.0052i 0.200-0.0040i 0.0001-
0.002i],[10 30 50 100 500],'units','Hz')
bode(sys)
```

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**Output:**

```
sys =

     Frequency (Hz)            Response
     --------------            --------
                10          2.100e-03 + 9.000e-04i
                30          2.700e-03 + 2.900e-03i
                50          4.400e-03 + 5.200e-03i
               100          2.000e-01 - 4.000e-03i
               500          1.000e-04 - 2.000e-03i
```