Useful MATLAB Functions:

Setting up a transfer functions in MATLAB:

```
sys = tf([numerator],[denominator]);
```

or

```
s = tf('s');
sys = 1/(s^2+2*s+1);
```

https://www.mathworks.com/help/control/ref/tf.html

Bode plot of a transfer function:

```
bode(sys)
```

https://www.mathworks.com/help/ident/ref/bode.html

Impulse response of a transfer function:

```
impulse(sys)
```

https://www.mathworks.com/help/control/ref/impulse.html

Step response of a transfer function:

```
step(sys)
```

https://www.mathworks.com/help/ident/ref/step.html

Extracting Information from the step response of a transfer function:

```
stepinfo(sys)
```

https://www.mathworks.com/help/control/ref/stepinfo.html

Simulating system response to a pre-defined input:

```
t = 1:0.1:10;
u = sin(10*t);
lsim(sys,u,t)
```

https://www.mathworks.com/help/control/ref/lsim.html

DC gain of a transfer function:

```
dcgain(sys)
```

https://www.mathworks.com/help/control/ref/dcgain.html

Bandwidth of a transfer function (rad/s):

```
bandwidth(sys)
```

https://www.mathworks.com/help/control/ref/dcgain.html