

$$3) \quad G(s) = \frac{40}{(s+1)(s+4)(s+5)(s+6)}$$

(a) max gain for stability

well $K(s) = \frac{-(s+1)(s+4)(s+5)(s+6)}{40}$

I can see $j\omega$ -crossing $= \pm j 3.5$, so $K(j 3.5) = 20.5$

(b) K for $\zeta = 0.6 \Rightarrow$ Intersection @ $-1.3219 \pm j 1.7626$

$$\Downarrow$$

$$K = 2.9282$$

(c) Dom. Pole $\Rightarrow -1.3219 \pm j 1.7626$

(d) DC gain. well, if I know steady state error to step,

So, DC gain is $\frac{0.4939}{0.5061}$.

could also just evalfr(CLTF, 0)

(ess) step $= \frac{1}{1+K_p} = 0.5061$

$K_p = KG|_{s=0} = 0.9761$

Command Window

New to MATLAB? See resources for [Getting Started](#).

```
>> stepinfo(CLTF)
```

```
ans =
```

struct with fields:

```
    RiseTime: 0.9289
  SettlingTime: 2.9907
  SettlingMin: 0.4470
  SettlingMax: 0.5363
    Overshoot: 8.5809
    Undershoot: 0
         Peak: 0.5363
    PeakTime: 2.0966
```

fx >>

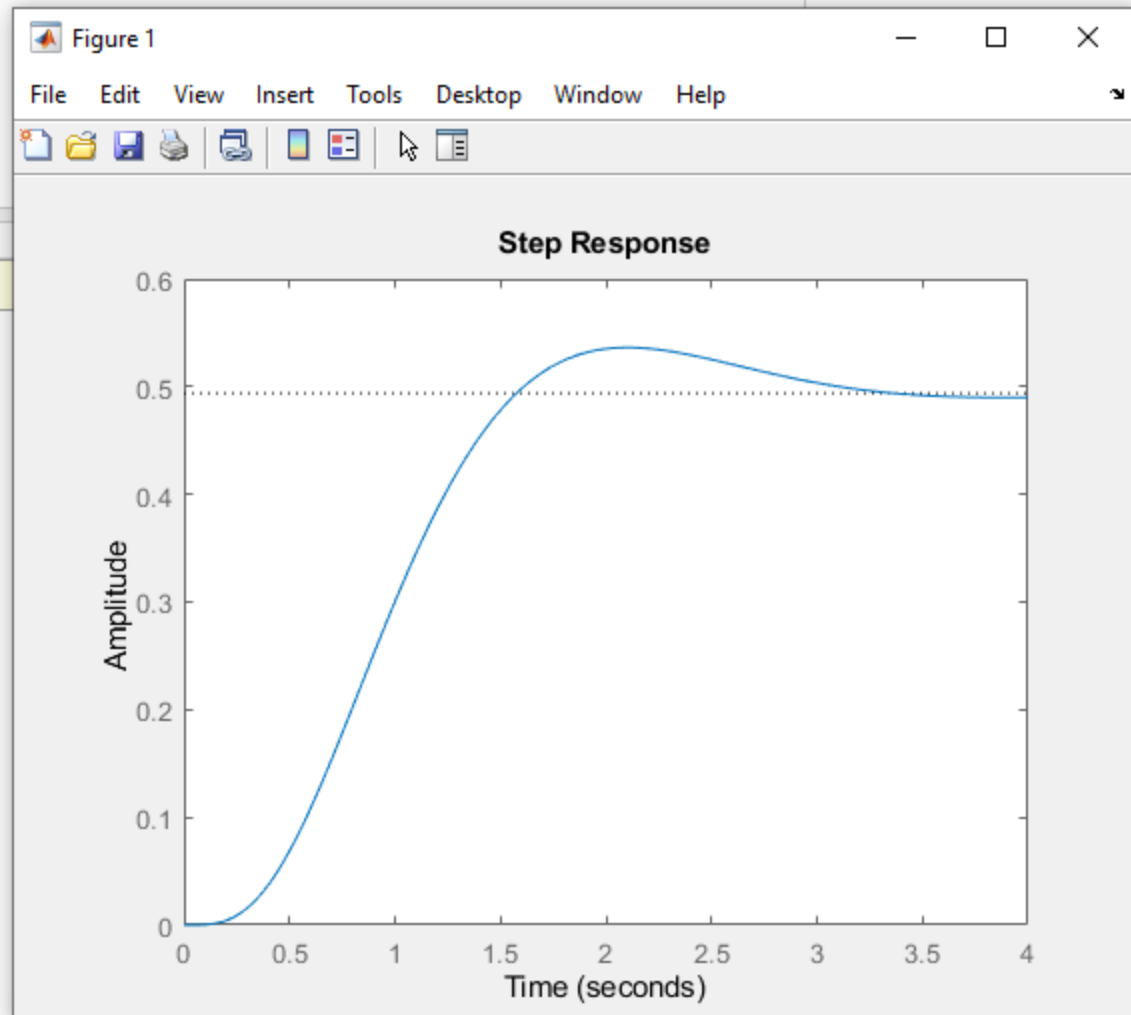


Figure 1

File Edit View Insert Tools Desktop Window Help

