6) $G(s) = \dfrac{100}{(s+0.5)(s+2)(s+6)}$ 0dB 5 rad/s $M_m = 1.45$

Using lead comp; zero @ 6

$$C(s) = 10K\frac{s+6}{s+60}$$

@ $M_m = 1.45$, $\phi = -139.6575°$, and want

$$(GK)|_{s=js} = 1\angle\phi$$

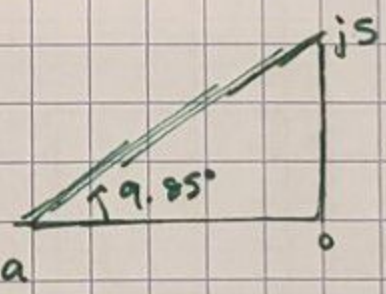
Start @

$$k(s) = \frac{s+0.5}{s} \Rightarrow \angle KG|_{s=js} = 162°$$

⇓ Too much

$$k(s) = \frac{(s+0.5)(s+2)}{s} \Rightarrow -129°$$

$\angle(s+a)$ needs to be $9.85°$ ⇒



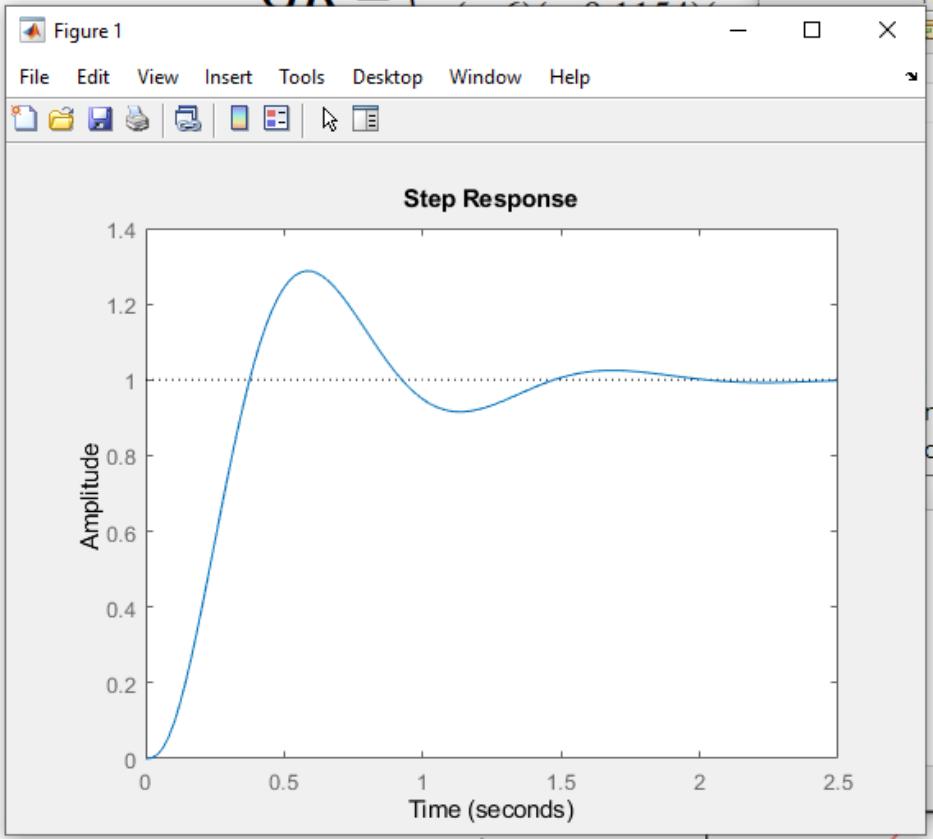
$a = 28.7914$

$$K(s) = k\frac{(s+0.5)(s+2)}{s(s+28.7914)}$$

⇓

Now $k = 11.4117$

$$GK = \frac{1000}{}$$



FILE NAVIGATE EDIT BREAKPOINTS RUN

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Editor - C:\Users\almos\OneDrive\Documents\Control Systems\nichols_on_tf.m

Bode2.m | Nichols2.m | transient_specs.m | nichols_on_data.m | nichols_on_tf.m

```
1 -    G = zpk([],[-0.1617,-1.04,-2.719,-5.05],1.4427, 'InputDela
2 -    w = logspace(-1,1,1001);
3 -    Gw = Bode2(G,w);
```

Command Window

New to MATLAB? See resources for Getting Started.

```
>> CLTF = feedback(L,1)

CLTF =

                1141.2 (s+0.5) (s+2)
  ---------------------------------------------
  (s+30.34) (s+2) (s+0.5) (s^2 + 4.454s + 37.62)

Continuous-time zero/pole/gain model.

>> step(CLTF)
fx >>
```