CMPE-242
Applied Feedback Control

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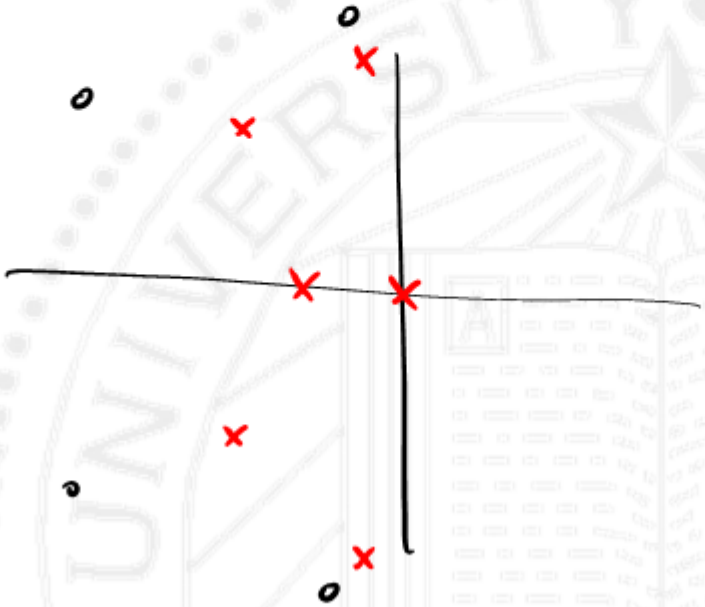
Winter 2016

Office Hours

29/FEB/2016

$$G_{AFT}(s) = \frac{\theta}{U} = \frac{k_1 (s^2 + 2\zeta\omega_n s + \omega_n^2)(s+a)}{s(s+b)(\quad)(\quad)}$$

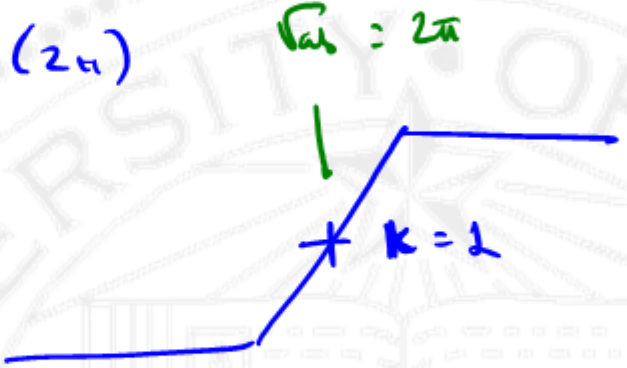


$D_1(s)$ → Bandwidth 2π rad/sec.

$55°$ PM

Gain → ω_{180} (2π)

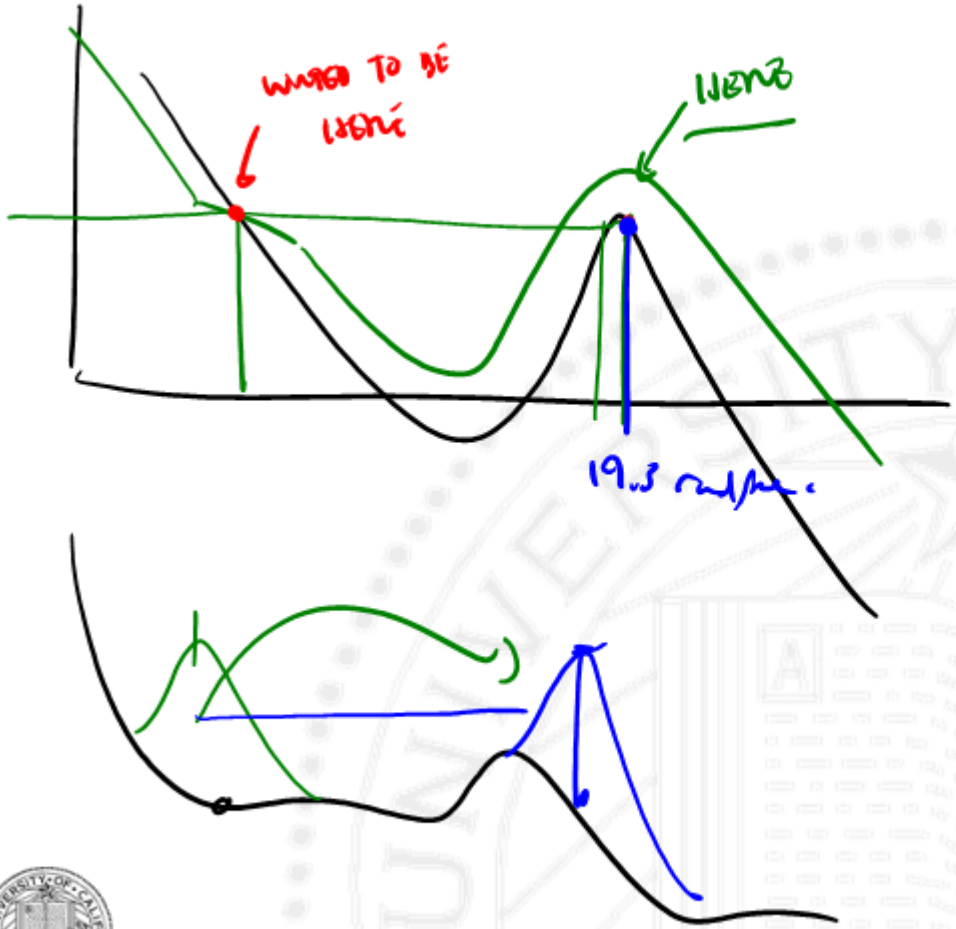
Lead → PM.



$$k_0 = \frac{1}{|G(s)|_{s=2\pi j}}$$

$$\angle G_{OPT}(s)\Big|_{2\pi j} = -180$$

$\frac{b}{a} = 10 \rightarrow 55°$


WHERE TO BE
WHERE
WHERE
19.3

$$\frac{Y}{R} = \frac{GK}{1+GK}$$

$$Y : \frac{GK}{1+GK}$$

$u \longrightarrow$ [F] $u : \frac{G}{1+GK}$

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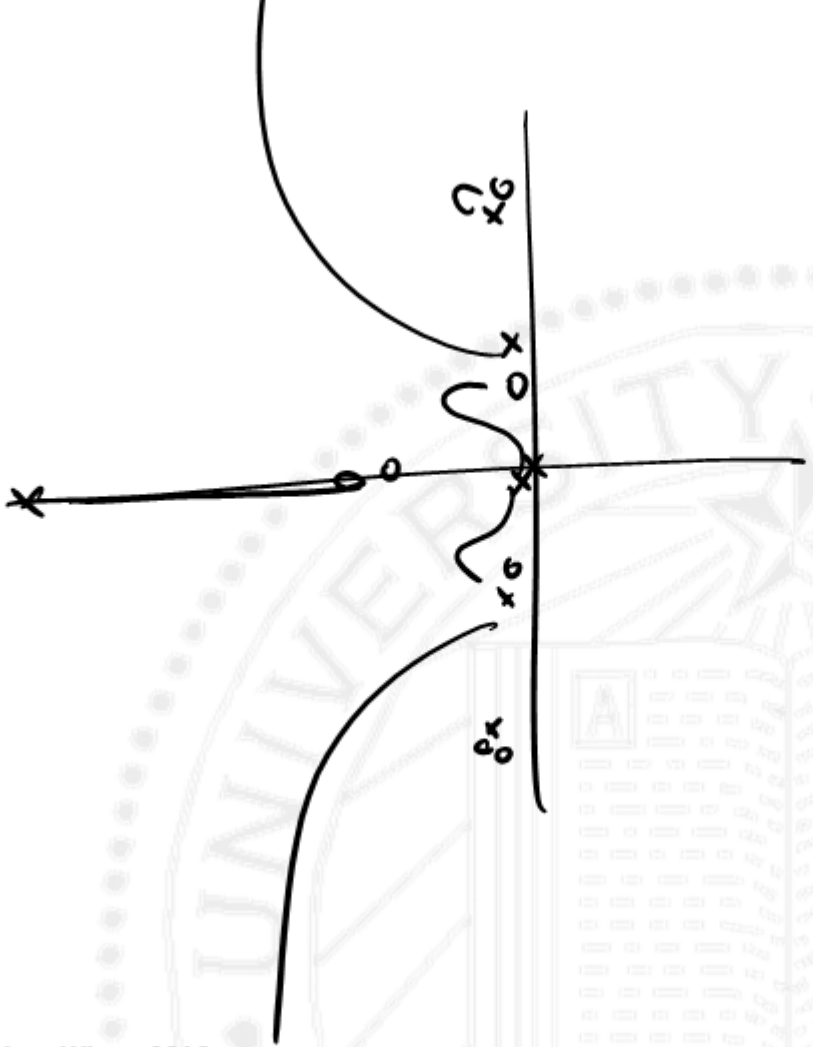
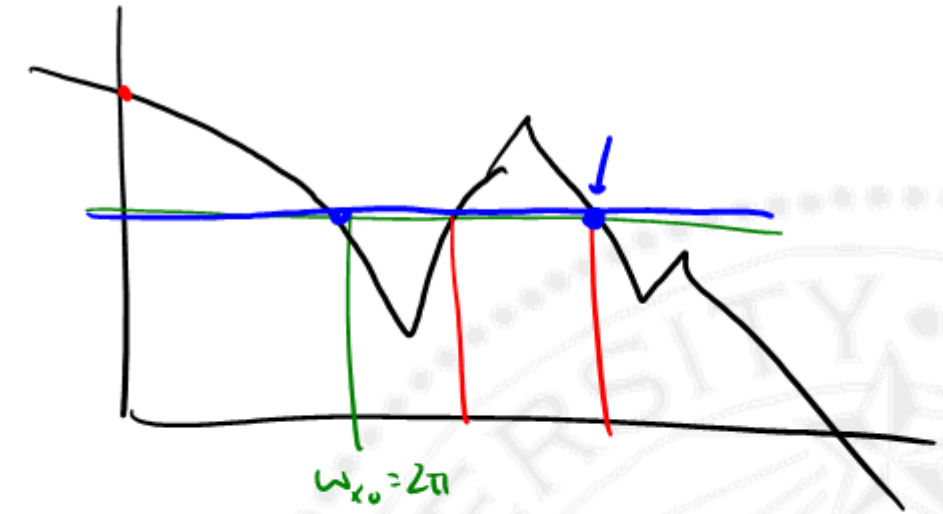
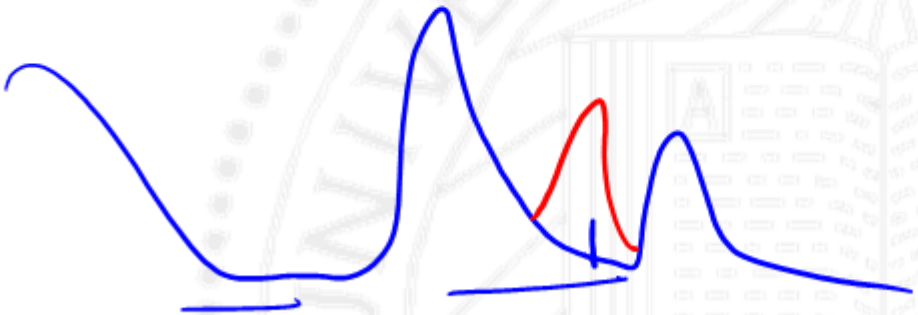
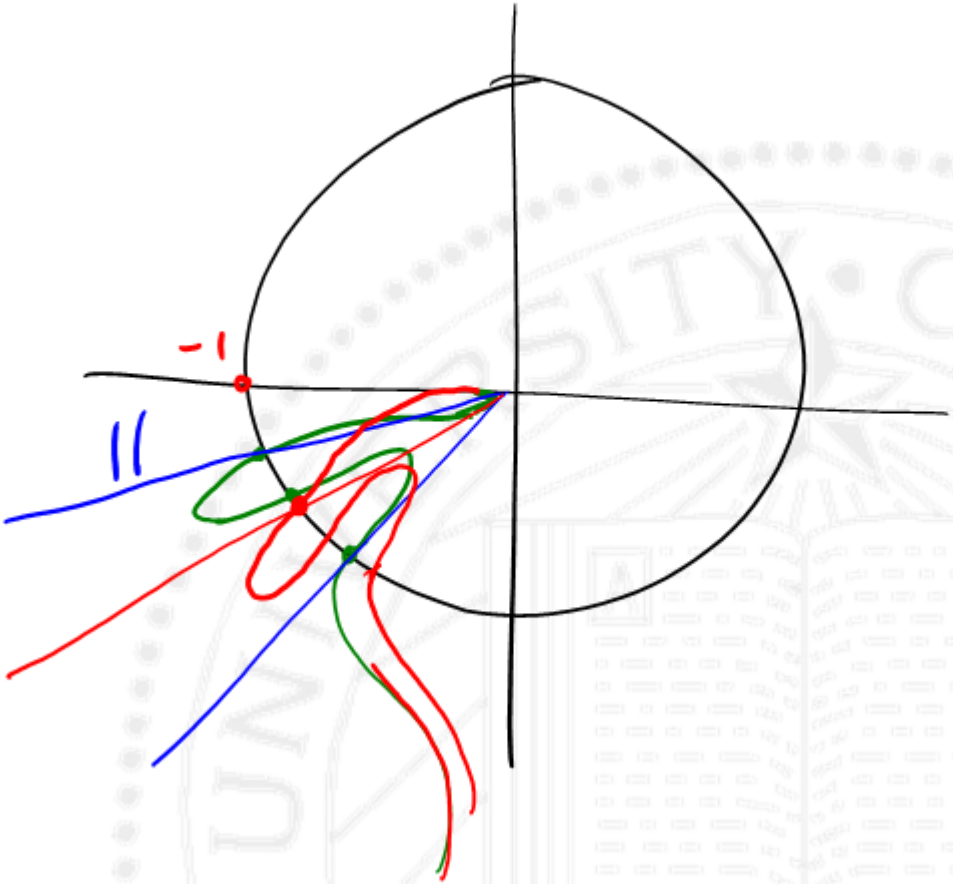
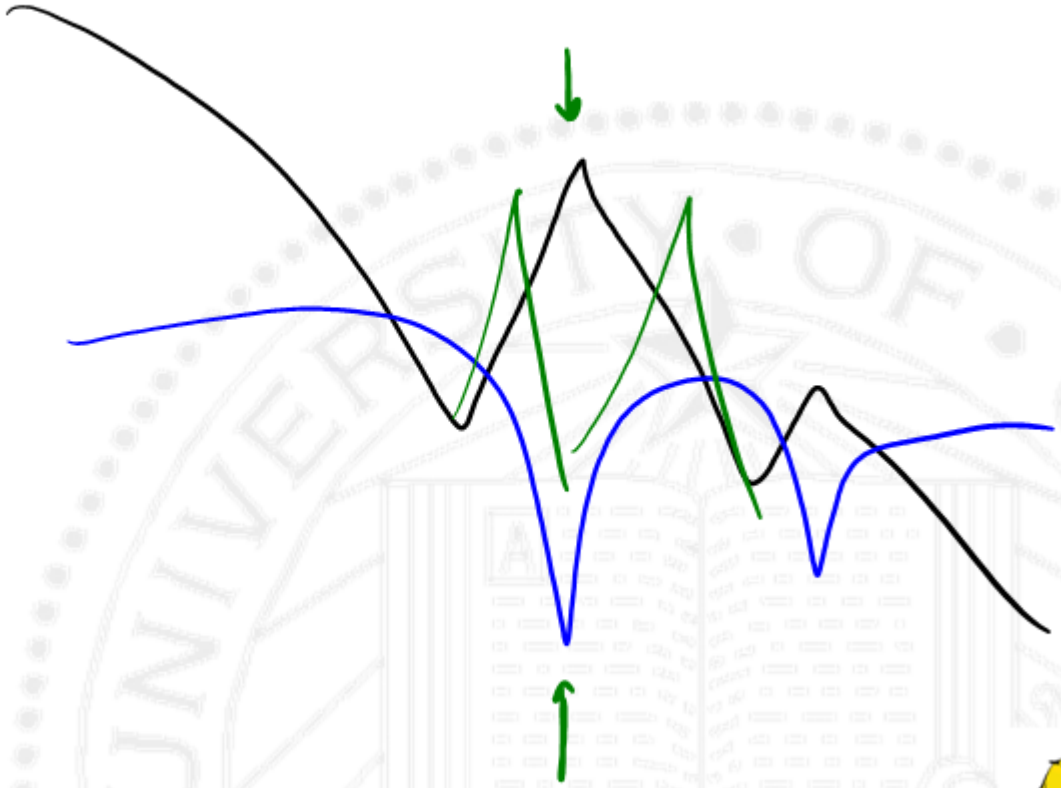

C_G
D_G

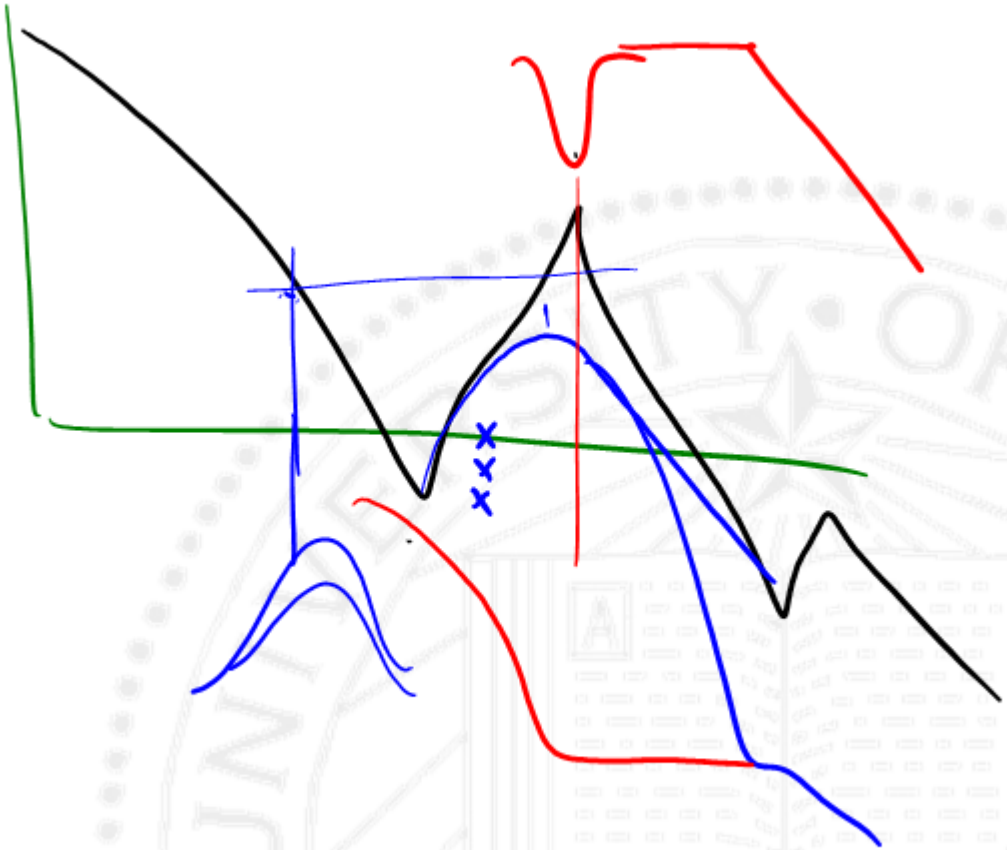

$\omega_{x_0} = 2\pi$

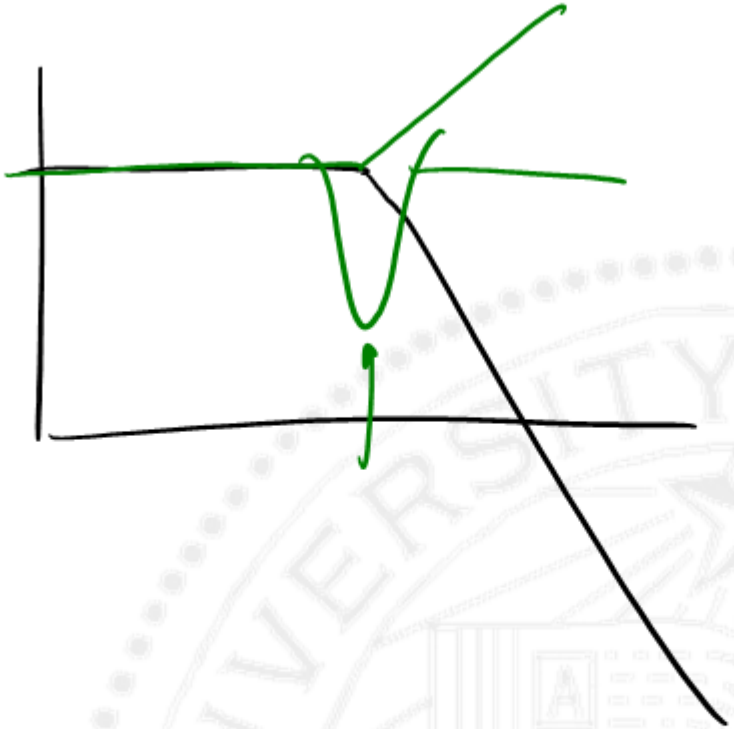



-1

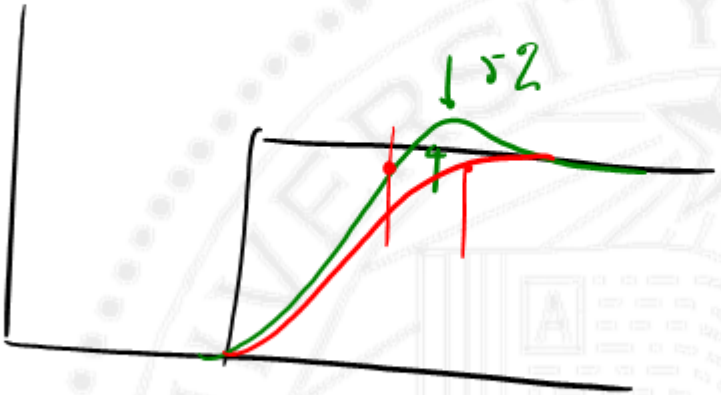
Loop

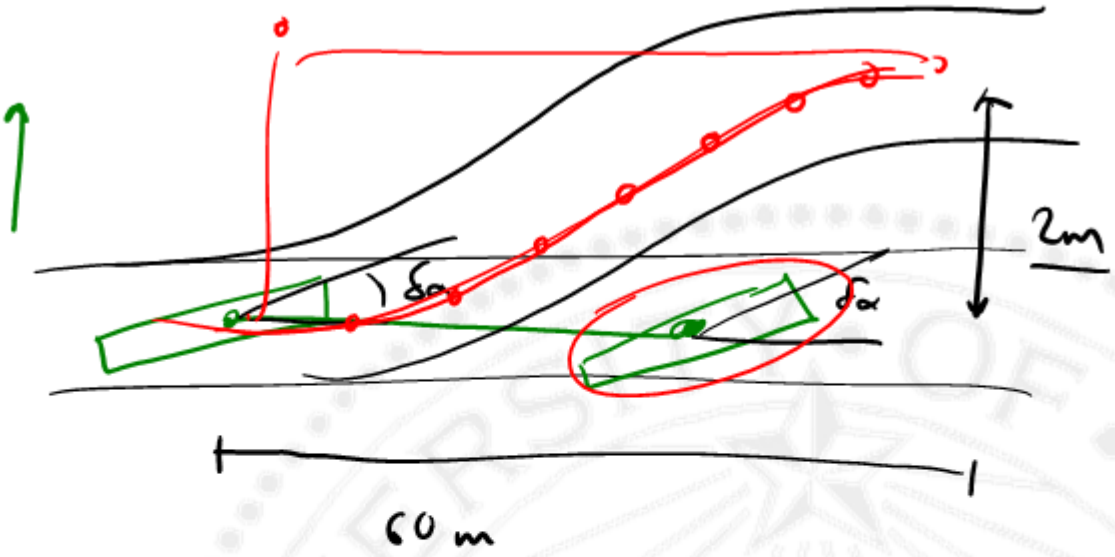




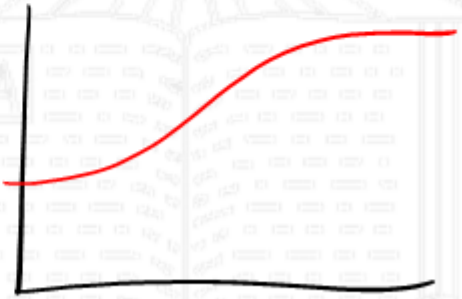


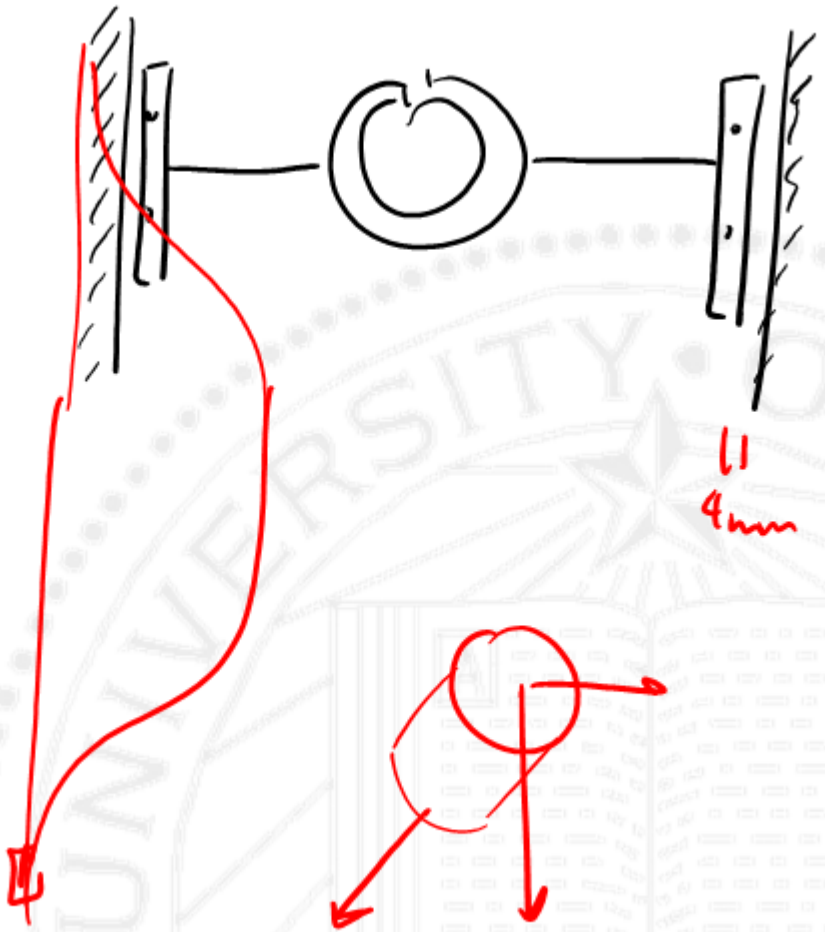
$\zeta \sim \frac{PM}{100} \sim 45° - .707 \downarrow 70°$





10 m/s.




l1
4mm