Date.....

Manan Madan 2018UIC3087

Control System - 1

Nyquist Problem

Ques 1. A unity feedback system has a loop transfer function

$$G(s) = \frac{50}{(s+1)(s+2)}$$

Use ~~nyq~~ nyquist criteria to comment on its stability

Ans) $$G(s) = \frac{50}{(s+1)(s+2)}$$

$$G(j\omega) = 50 / (j\omega+1)(j\omega+2)$$

$$M = |G(j\omega)| = 50 / \sqrt{1+\omega^2}\sqrt{4+\omega^2}$$

$$\phi = \tan^{-1}(\omega) - \tan^{-1}(\omega/2) \quad -(2)$$

ω varies from 0 to ∞

SNo	ω	$M = \lvert G(j\omega)\rvert$	$\angle G(j\omega) = \phi$
1.	0	25	0°
2.	1	16	-72°
3	2	8	-108°
4	10	0.5	-163°
5	20	0.1	-171°
6°	100	0.05	-178°
7	∞	0	-180°