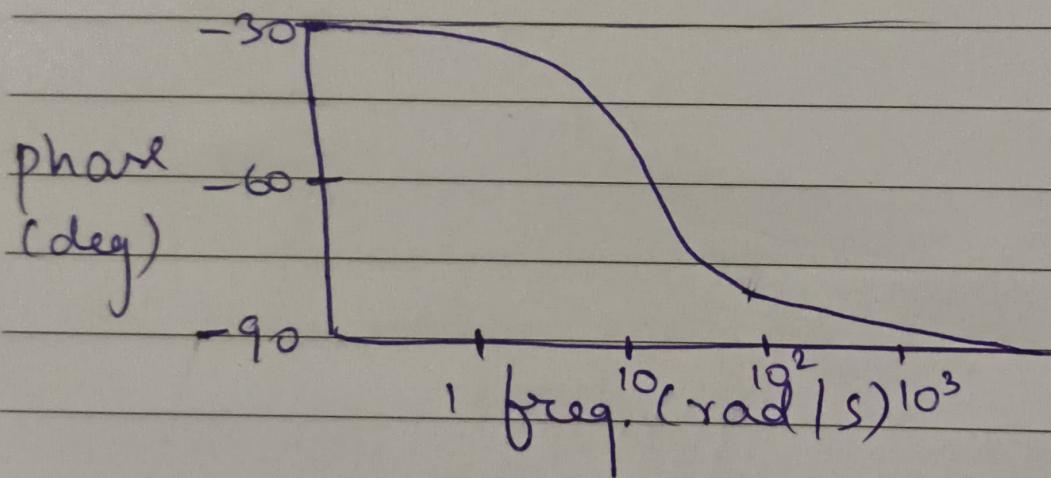
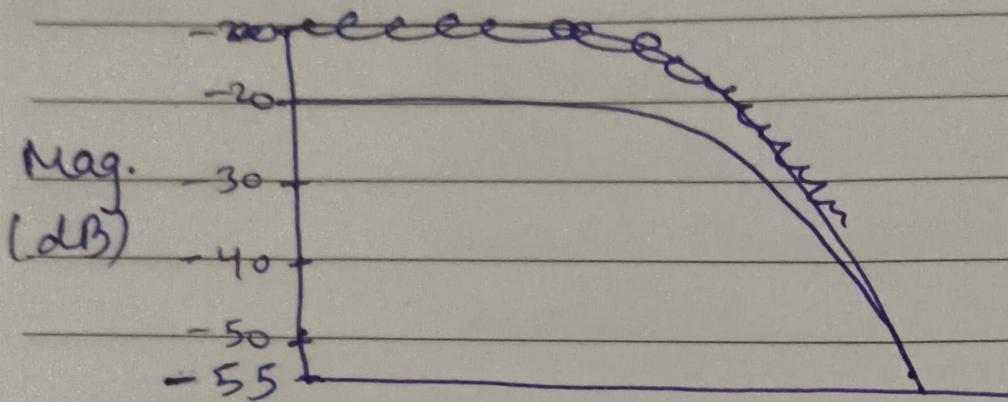


Notes

Part A

A.1 ~~$G_1(s)$~~ $G_1(s) = \frac{10}{s+10}$

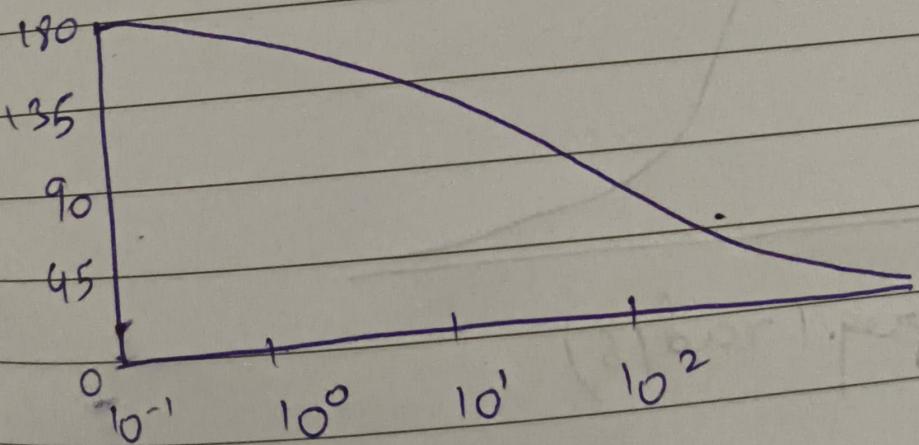
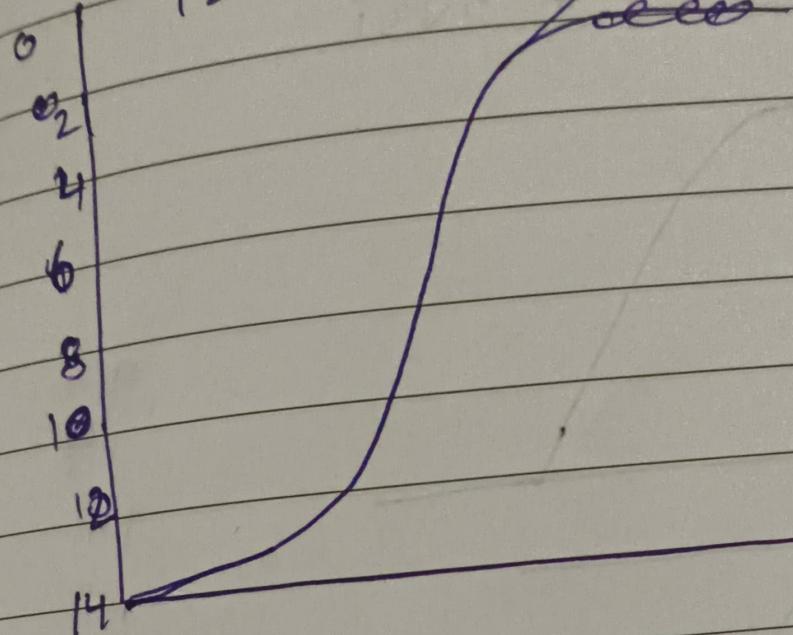
pole = -10 $G_1(0) = 1$



Notes

A-2 $q_2(s) = \frac{s-2}{s+10}$

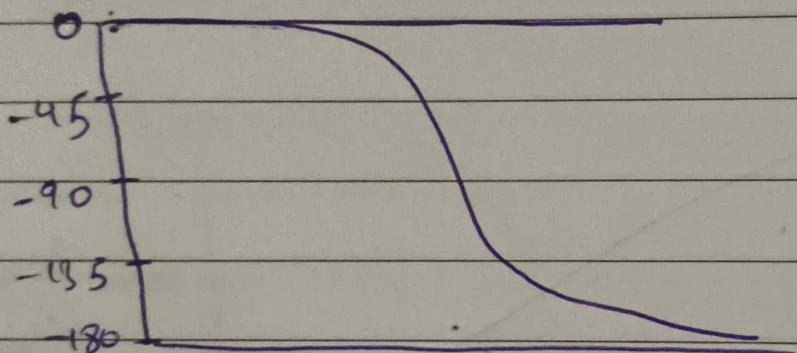
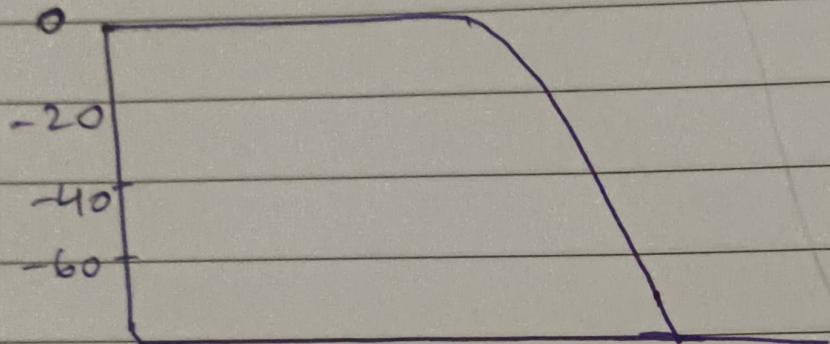
1 zero: $s = 2$ pole: $s = -10$
 $q_2(0) = -1/5$



Notes

$$A.3 : G_3(s) = \frac{100}{s^2 + 10s + 100}$$

poles: $s = -5 + 5\sqrt{3}i$
 $-5 - 5\sqrt{3}i$



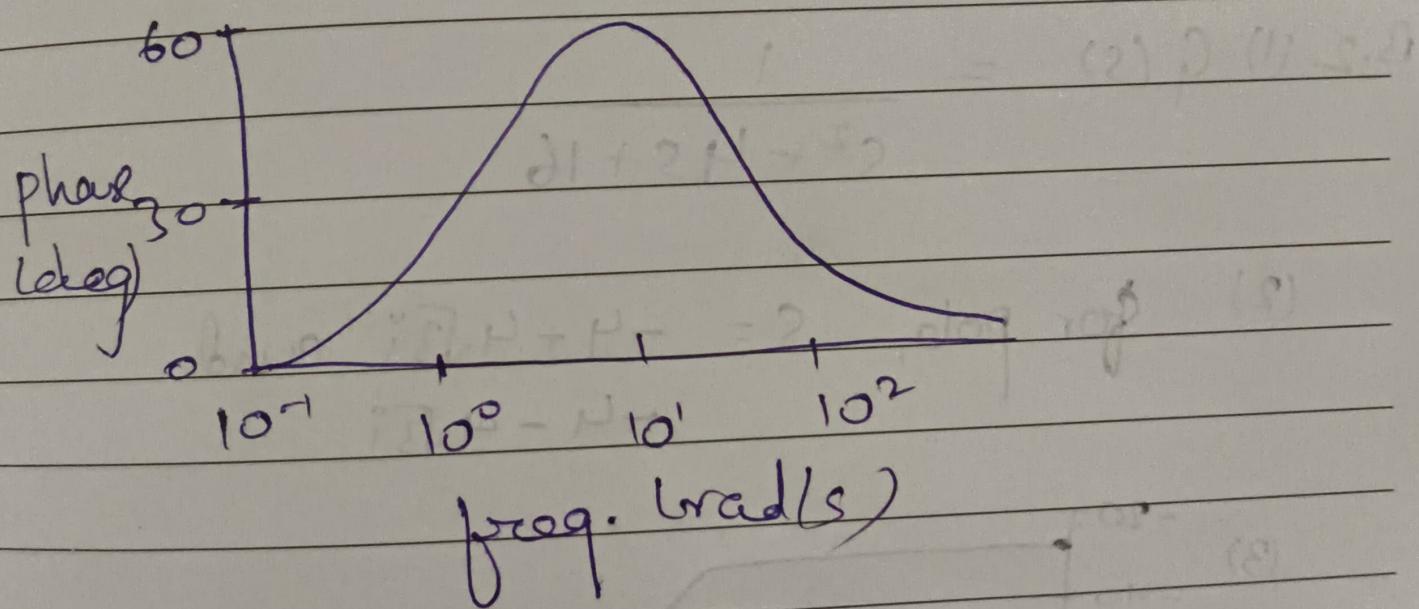
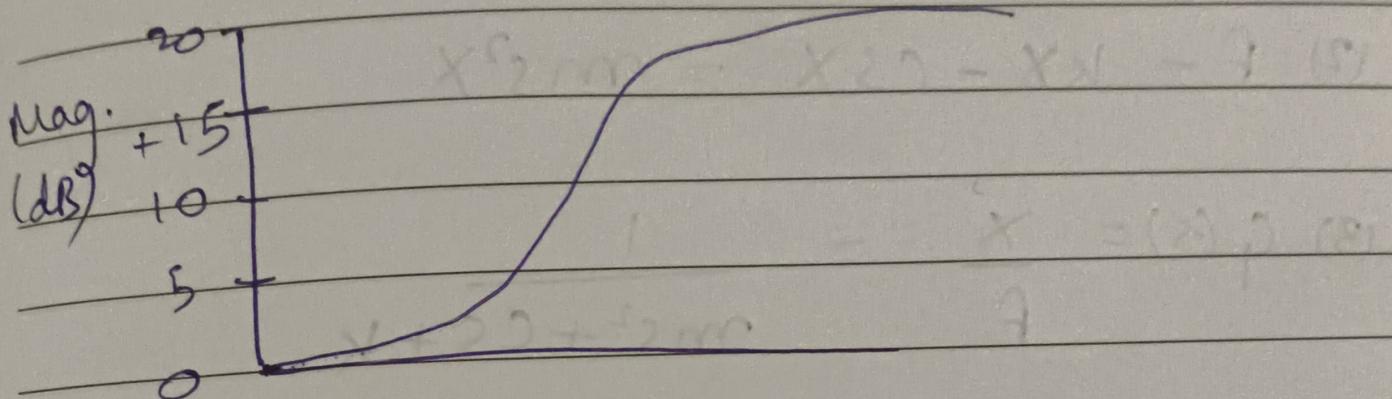
freq. (rad/s)

Notes

Date / /

$$A.4 \quad G_4(s) = \frac{0.1s + 1}{0.01s + 1}$$

zero: $s = -\infty$ pole: $s = -100$



Part B

B.1 (1) $f(t) - kx - c\dot{x} = m\ddot{x}$

(2) $f - kx - csx = ms^2x$

(3) $G(s) = \frac{x}{f} = \frac{1}{ms^2 + cs + k}$

B.2 (1) $G(s) = \frac{1}{s^2 + 4s + 16}$

(2) For pole, $s = -4 + 4\sqrt{3}i$ and
 $-4 - 4\sqrt{3}i$

