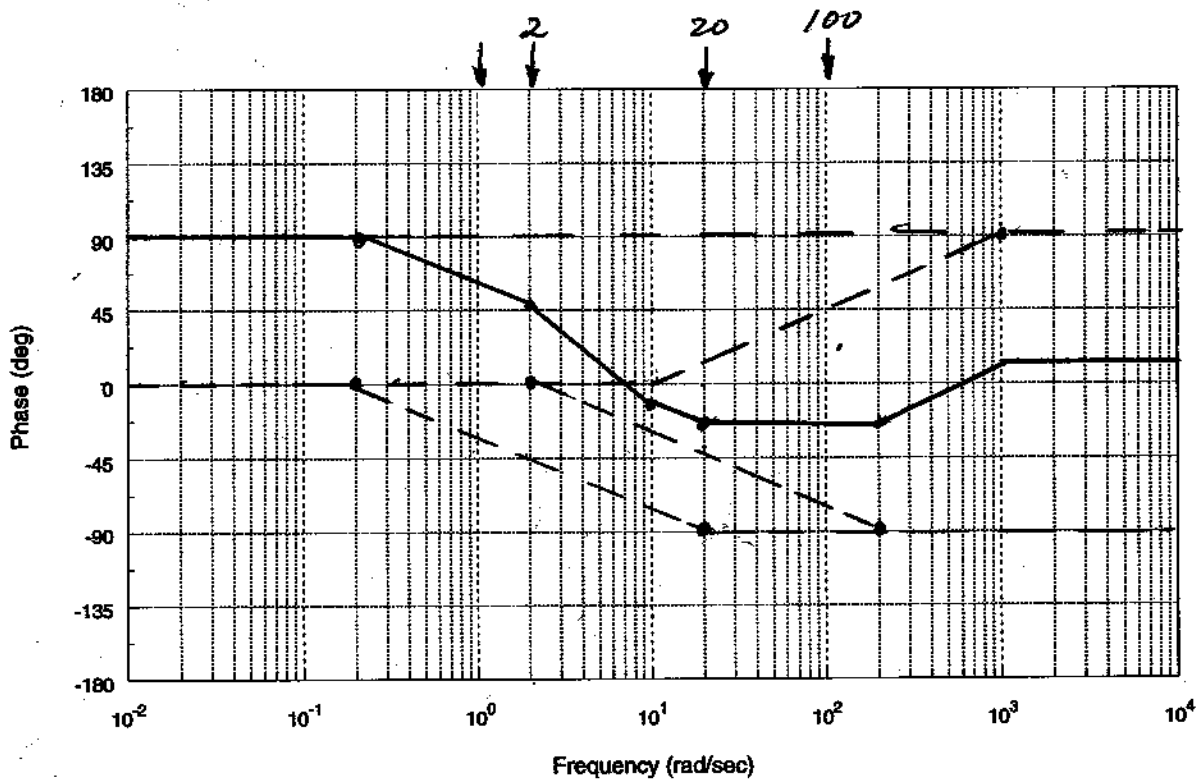
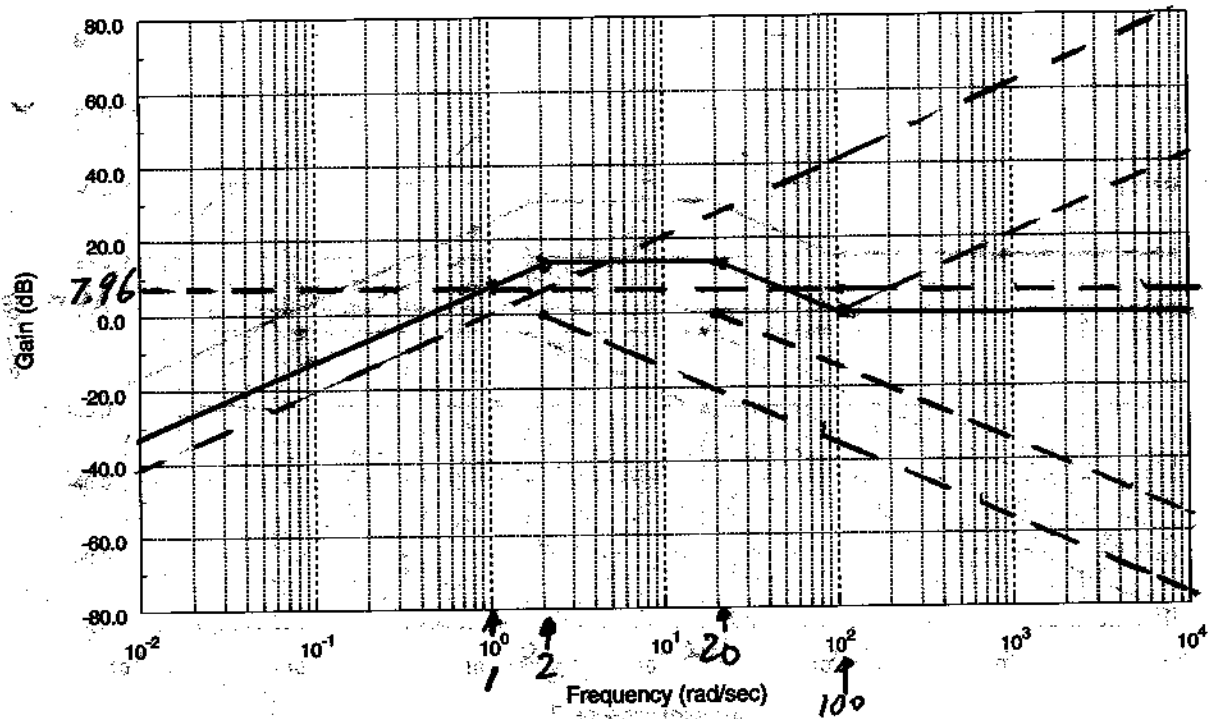


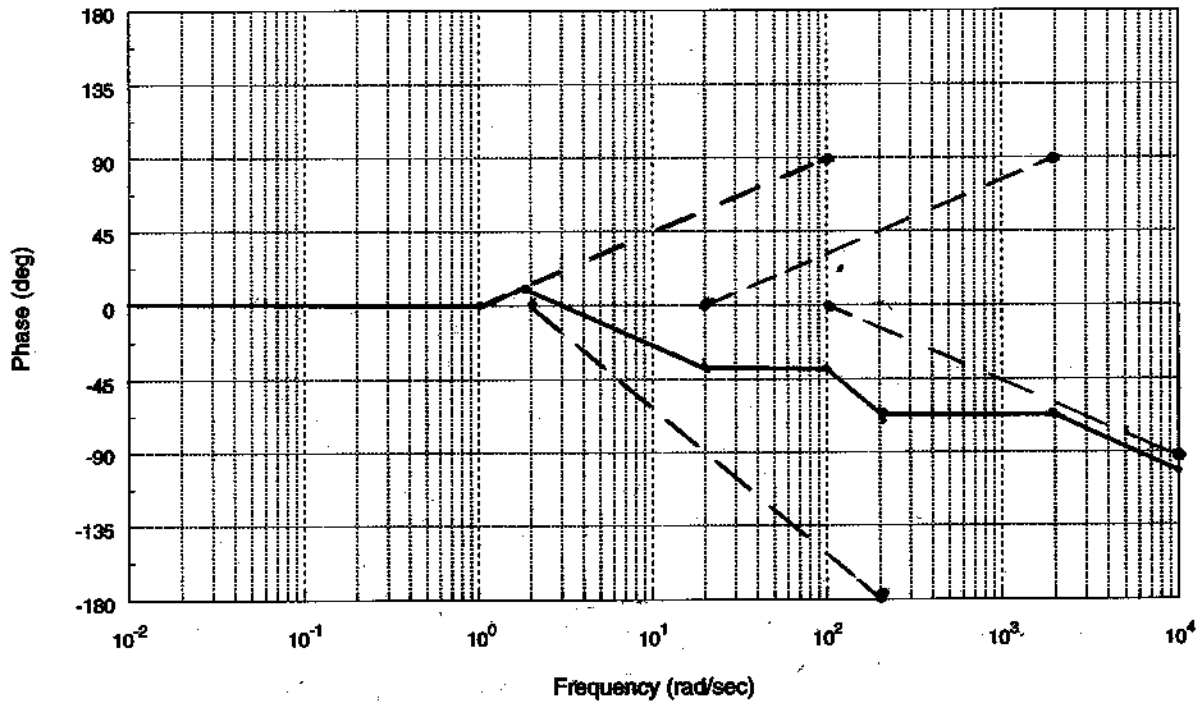
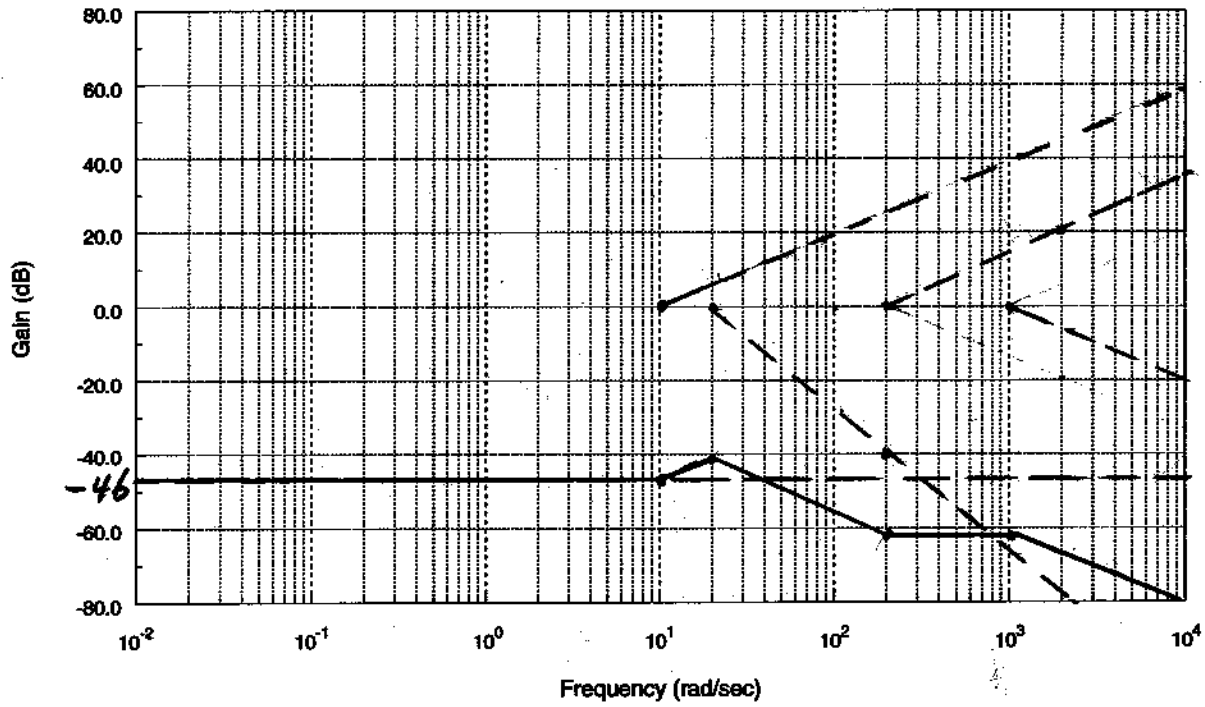
7-2-1 (a)

$$H(s) = \frac{2.5 s (1 + \frac{s}{100})}{(1 + \frac{s}{2})(1 + \frac{s}{20})}$$

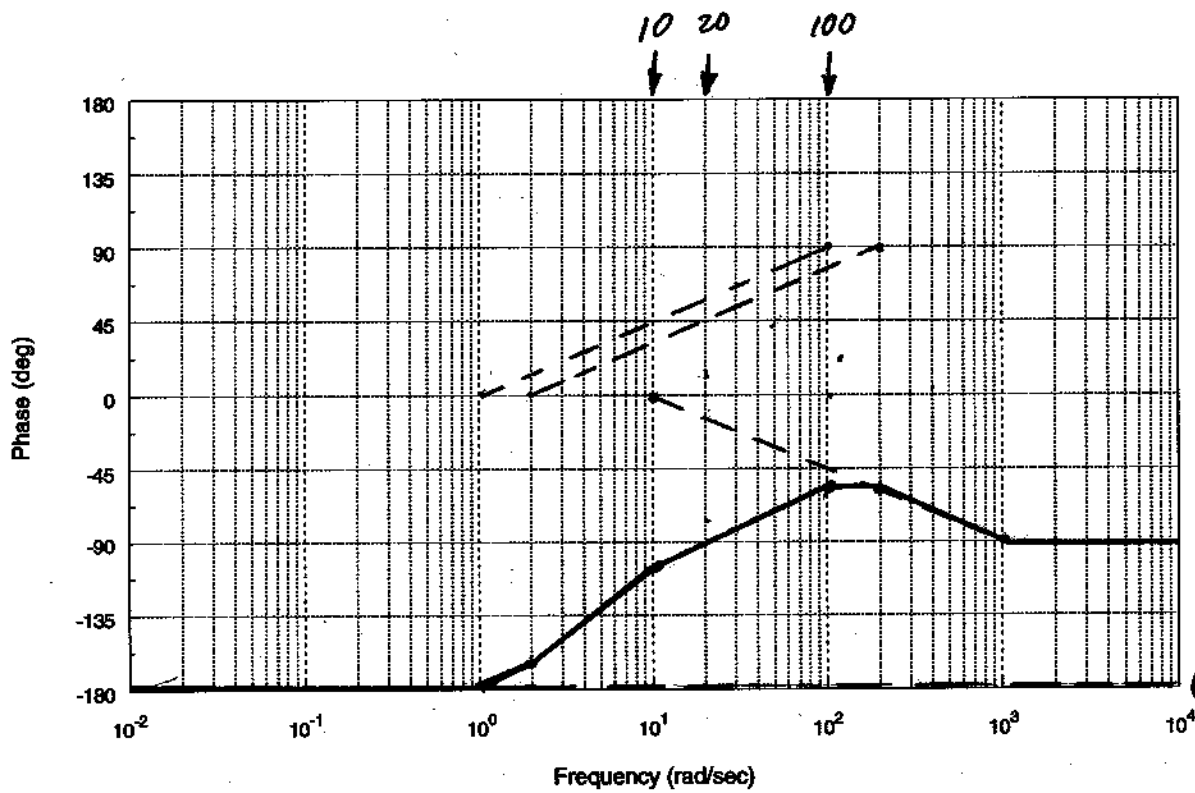
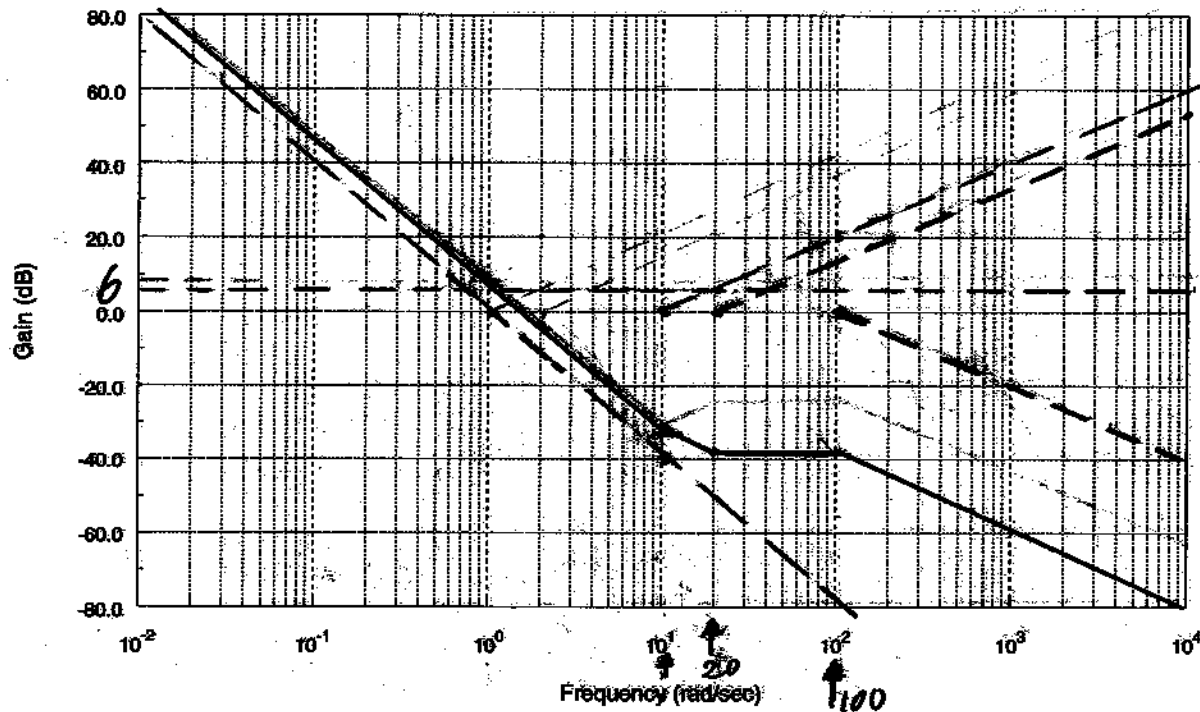


7.2-1 (c)

$$H(s) = \frac{1}{200} \left(1 + \frac{s}{10}\right) \left(1 + \frac{s}{200}\right) \frac{1}{\left(1 + \frac{s}{20}\right) \left(1 + \frac{s}{20}\right) \left(1 + \frac{s}{1000}\right)}$$



7.2-1 (b) $H(s) = \frac{2(1 + \frac{s}{10})(1 + \frac{s}{20})}{s^2(1 + \frac{s}{100})}$



$$7.2-2(b) \quad H(s) = \frac{s}{(s+1)(s^2+14.14s+100)} = \frac{1}{100} \frac{s}{(1+s)(\frac{s^2}{100} + 0.1414s + 1)}$$

$$20 \log_{10} \left(\frac{1}{100} \right) = -40 \text{ dB}; \quad \sqrt{100} = 10 = \omega_n; \quad \frac{14.14}{2 \cdot \omega_n} = \zeta = 0.707$$

