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$$a. F(s) = \frac{21s+5}{\frac{s^2}{10} + 4s+3} = \frac{210s+50}{s^2+40s+30} = F(s)$$

$$f(0^+) = \lim_{s \rightarrow \infty} sF(s) = \lim_{s \rightarrow \infty} \left(\frac{210s^2 + \dots}{s^2 + \dots} \right) = \boxed{210}$$

$$f(\infty) = \lim_{s \rightarrow 0} sF(s) = \lim_{s \rightarrow 0} \left(\frac{210s^2 + 50s}{s^2 + 40s + 30} \right) = \frac{0}{30} = \boxed{0}$$

$$b. F(s) = \frac{2s^3 + 7s^2 + s + 4}{s(s^3 + s^2 + 7s + 6)} \Rightarrow sF(s) = \frac{2s^3 + 7s^2 + s + 4}{s^3 + s^2 + 7s + 6}$$

$$f(0^+) = \lim_{s \rightarrow \infty} (sF(s)) = \frac{2s^3 + \dots}{s^3 + \dots} = \boxed{2}$$

$$f(\infty) = \lim_{s \rightarrow 0} (sF(s)) = \frac{2s^3 + 7s^2 + s + 4}{s^3 + s^2 + 7s + 6} = \boxed{\frac{2}{3}}$$

$$c. F(s) = \frac{s^2 + 4s + 3}{s(s^4 + 5s^3 + 5s^2 + 4s + 4)} \Rightarrow sF(s) = \frac{s^2 + 4s + 3}{s^4 + 5s^3 + 5s^2 + 4s + 4}$$

$$f(0^+) = \lim_{s \rightarrow \infty} (sF(s)) = \frac{s^2 + \dots}{s^4 + \dots} = \boxed{0}$$

$$f(\infty) = \lim_{s \rightarrow 0} (sF(s)) = \frac{s^2 + 4s + 3}{s^4 + 5s^3 + 5s^2 + 4s + 4} \Big|_{s=0} = \boxed{\frac{3}{4}}$$

✓ to see if any poles are in RHP:

Part a) $P_i = .76 \ \& \ 39.2 \ \checkmark \text{ ok}$

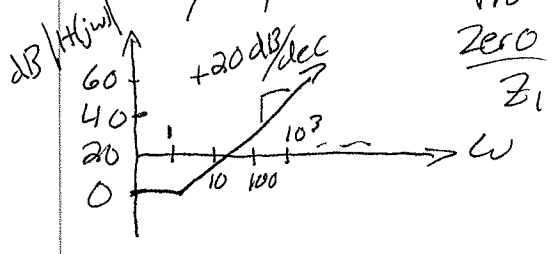
Part b) $P_i = .87 \ \& \ .87 \ \& \ .87 \ \& \ 0 \ \checkmark \text{ ok}$

→ Note: Can have 1 pole @ origin

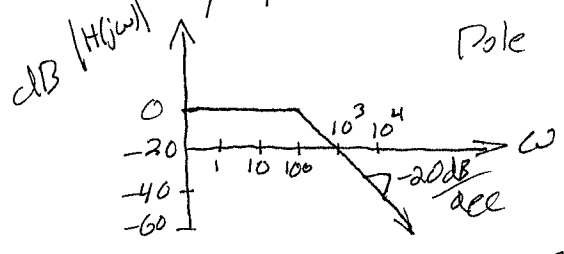
Part c) $P_i = 0 \ \& \ 1.17 \ \& \ 1.17 \ \& \ 3.91 \ \& \ 3.91 \ \checkmark \text{ ok}$

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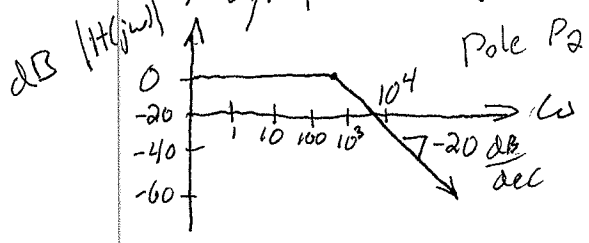
Asymptote $(\frac{s}{16} + 1)$



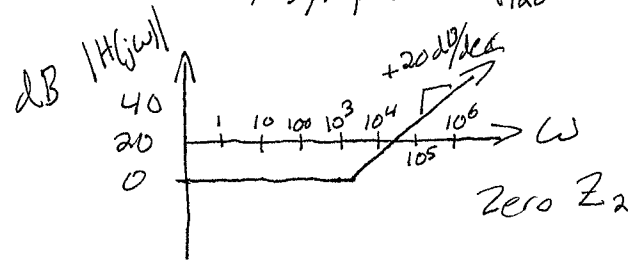
Asymptote $(\frac{s}{100} + 1)$



Asymptote $(\frac{s}{400} + 1)$



Asymptote $(\frac{s}{1200} + 1)$



DC Gain = $10 \frac{V}{V} = 20 \text{ dB}$

Total Magnitude Plot

