Modelling and control summaries

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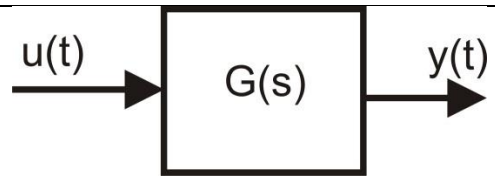
Nyquist 3: Illustrations of sketching



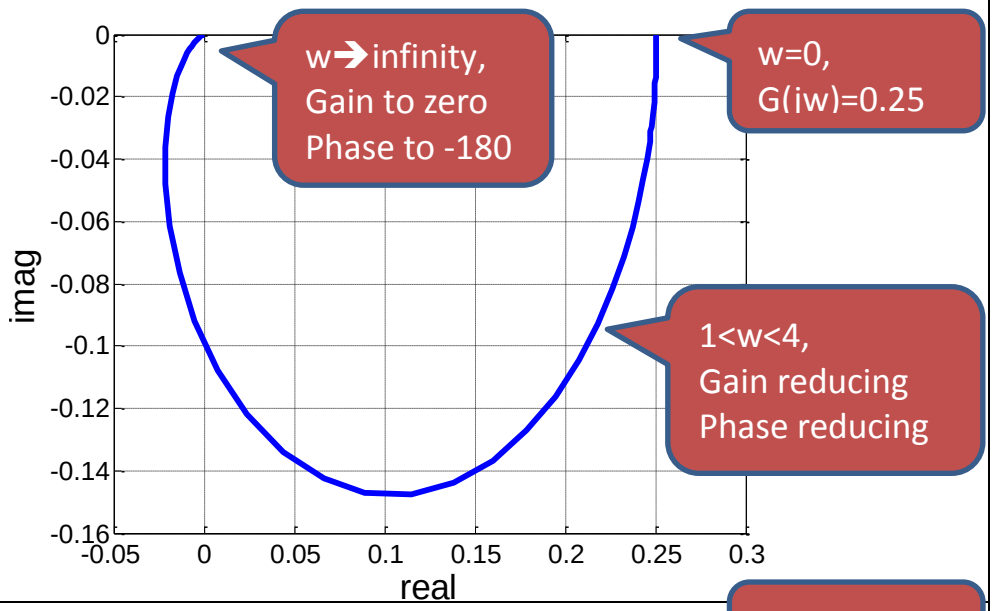
SUMMARY of Frequency response

$$G(jw)$$

SKETCHING NYQUIST OF DIFFERENT G(s) USING TRENDS

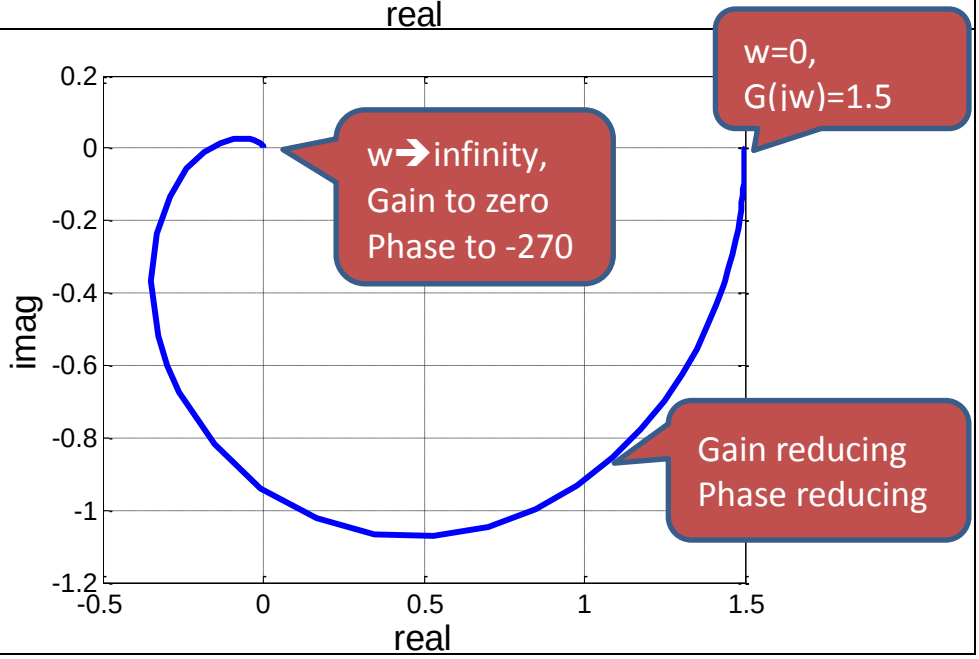
Note how initial/final values and trends can be used to form a reasonable sketch.

$$\frac{1}{(s+1)(s+4)}$$



2nd example

$$\frac{3}{(s+1)^2(s+2)}$$



REMARKS:

1. Trends can be very useful for seeing the impact of different pole/zero positions on the resulting shapes of the Nyquist diagram.
2. This insight is invaluable later!
3. Always a good idea to use MATLAB to check your answers

NOTE HOW CHANGING ZERO CHANGES TREND HUGELY

$$G1 = \frac{9s+3}{(s+1)(s+2)}; \quad G2 = \frac{2s+3}{(s+1)(s+2)}; \quad G1 = \frac{0.3s+3}{(s+1)(s+2)}$$