

Modelling and control summaries



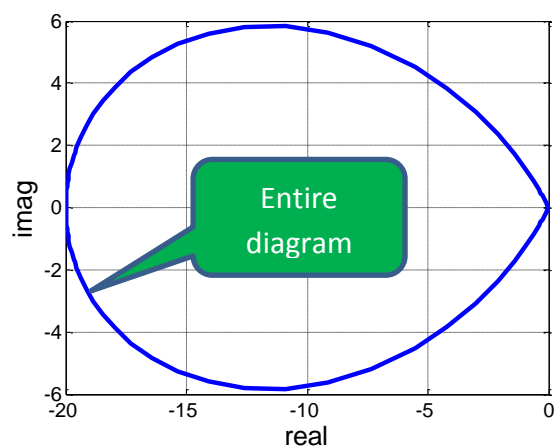
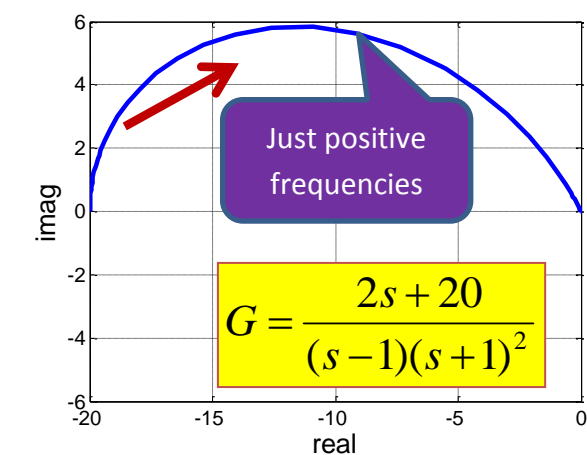
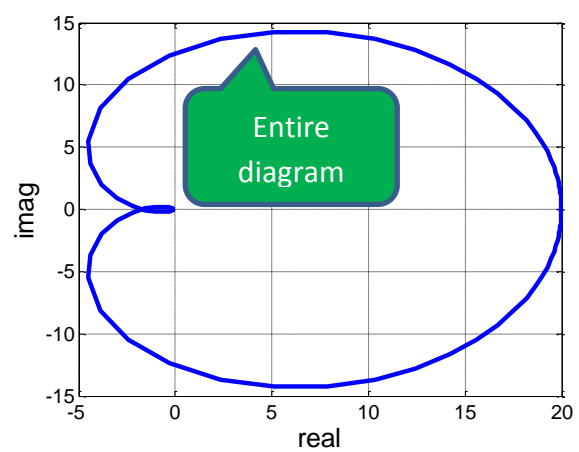
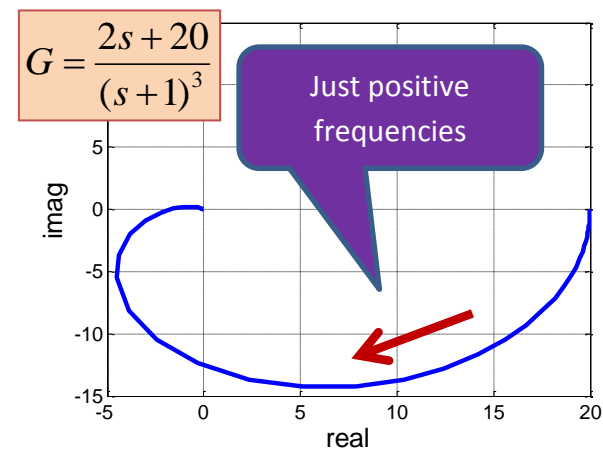
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Nyquist 10: Sketching complete diagrams

The full definition of a Nyquist diagram is the mapping of $G(s)$ while s describes the D-contour.

Examples without integrators

In this case it is enough to recognise that the part of the diagram corresponding to negative frequencies is the mirror image of the part corresponding to positive frequencies.



REMARK:

It is wise to also mark the direction of increasing frequency (see arrows) as this is needed to ensure that any right angle turns are also RIGHT HAND TURNS, that is one turns to right as move in direction of increasing frequency.

Examples with integrators

In this case it is both important to recognise that the part of the diagram corresponding to negative frequencies is the mirror image of the part corresponding to positive frequencies and also to ensure that one includes:

1. Right hand right angle turns corresponding to $w=0^-$ and 0^+
2. The encirclement at ∞ corresponding to the D-contour skipping around the origin. This encirclement will always go in a clockwise direction, half an encirclement for each integrator.
3. First example below has one integrator, so half an encirclement. The second has 2 integrators and hence a full 360 degrees.

