Example 2

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

$$\#(\text{RHP open-loop poles}) = 1 \qquad \text{at } s = 1$$

Routh: the characteristic polynomial is

$$s^3 + s^2 + s + K - 3 \qquad \text{— 3rd degree}$$

— stable if and only if $K - 3 > 0$ and $1 > K - 3$.

Stability range: $3 < K < 4$

Let's see how to spot this using the Nyquist criterion ...