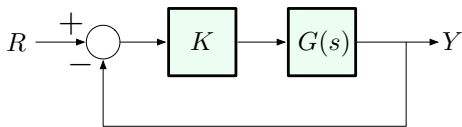# Nyquist Criterion: P

$$G(s) = \frac{q(s)}{p(s)}, \qquad \deg(q) \leq \deg(p)$$

$$1 + KG(s) = 1 + K\frac{q(s)}{p(s)} = \frac{p(s) + Kq(s)}{p(s)}$$

Therefore:

$$
\begin{aligned}
P &= \#(\text{poles of } 1 + KG(s) \text{ inside } C) \\
&= \#(\text{RHP poles of } 1 + KG(s)) \\
&= \#(\text{RHP roots of } p(s)) \\
&= \#(\text{RHP open-loop poles})
\end{aligned}
$$