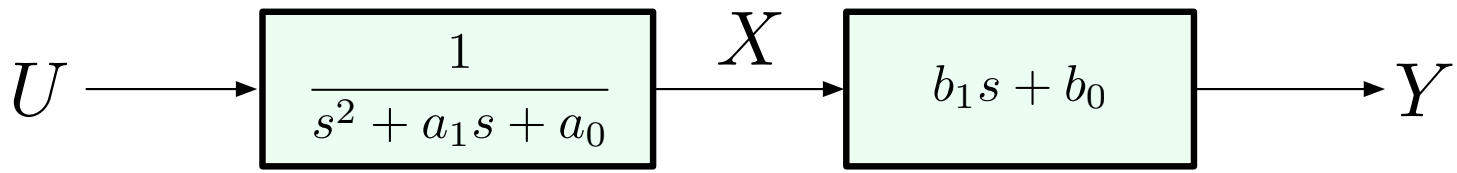
Example 3

Build an all-integrator diagram for a system with transfer function

$$H(s) = \frac{b_1 s + b_0}{s^2 + a_1 s + a_0}$$

Step 1: decompose $H(s) = \dfrac{1}{s^2 + a_1 s + a_0} \cdot (b_1 s + b_0)$



— here, X is an auxiliary (or intermediate) signal

Note: $b_0 + b_1 s$ involves *differentiation*, which we cannot implement using an all-integrator diagram. But we will see that we don't need to do it directly.