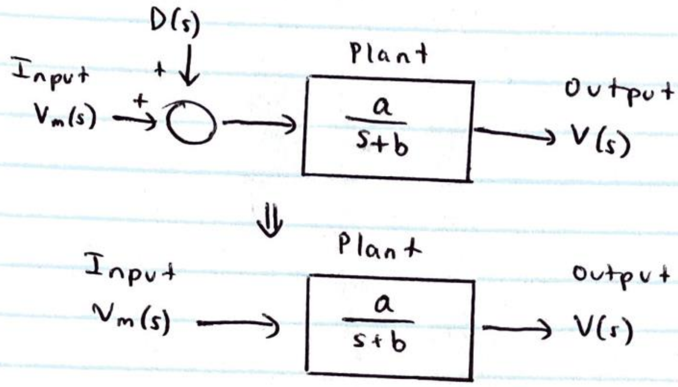
Lab 2 Preparation

$\theta = 0$, $D(s) = 0$

$V_m(t) = V_0 \cdot 1(t)$, $V_0 > 0$



$$V_m(t) = V_0 \cdot 1(t)$$

$$V_m(s) = \frac{V_0}{s}$$

$$V(s) = V_m(s)\, \frac{a}{s+b}$$

$$V(s) = \frac{V_0}{s}\left(\frac{a}{s+b}\right)$$

In order to use Final Value Theorem, verify stability. ~~using Routh Hurwitz~~.

$$s(s+b) = 0$$

$s = 0$ and $s = -b$, assuming $b = \frac{B}{M} > 0$, we have a pole in OLHP and one pole at $s = 0$. Thus, we can use Final Value Theorem.

$$v(+\infty) = \lim_{t \to \infty} v(t) = \lim_{s \to 0} s\,V(s)$$

$$= \lim_{s \to 0} \cancel{s} \cdot \frac{V_0}{\cancel{s}} \cdot \frac{a}{s+b}$$

$$= \lim_{s \to 0} V_0 \cdot \frac{a}{s+b}$$

$$\boxed{v(+\infty) = V_0\left(\frac{a}{b}\right)}$$