# LAB 3

# ECE356

**Andy Gong**
1008848482

# Contents

# 1 Preparation

Assuming $\theta = 0$ and hence $D(s) = 0$, find final value of $v$ if input is $v_m(t) = V_0 \cdot \mathbb{1}(t)$, and $v(0) = 0$.

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

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

Using FVT:

$$\lim_{t\to\infty} v(t) = \lim_{s\to 0} s \cdot V(s) = \lim_{s\to 0} s \cdot V_0 \cdot \frac{a}{s \cdot (s+b)} = V_0 \cdot \frac{a}{b}$$