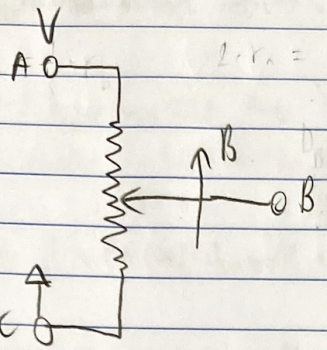
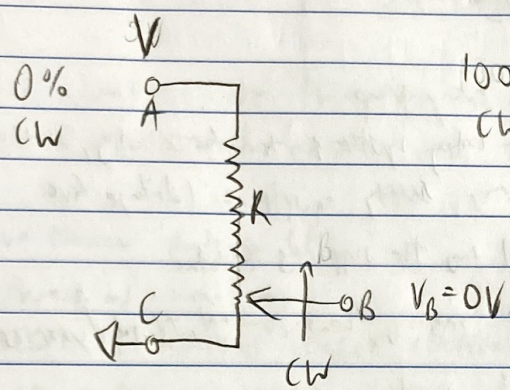
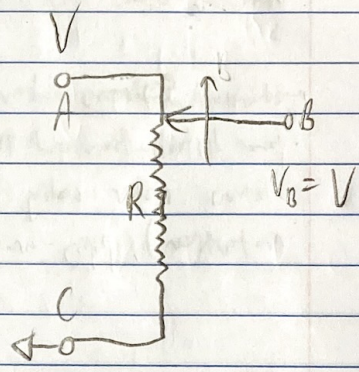
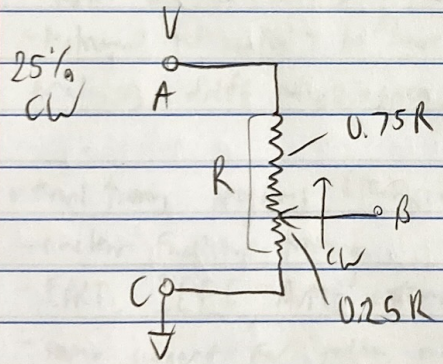
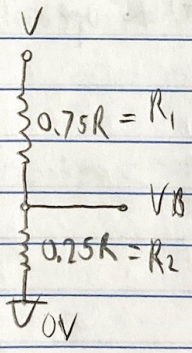


CW sensor





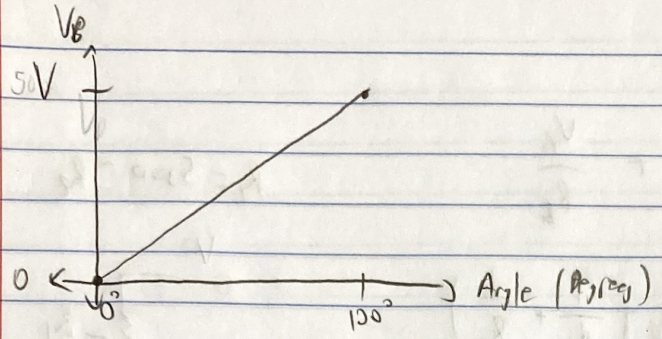




$$0 = \frac{V_B - V}{0.75R} + \frac{V_B - 0}{0.25R}$$

$$\frac{V}{\frac{3}{4}R} = V_B\left(\frac{1}{\frac{3}{4}R} + \frac{1}{\frac{1}{4}R}\right) \qquad \frac{V}{0.75R} = V_B\left(\frac{1}{0.75R} + \frac{1}{0.25R}\right)$$

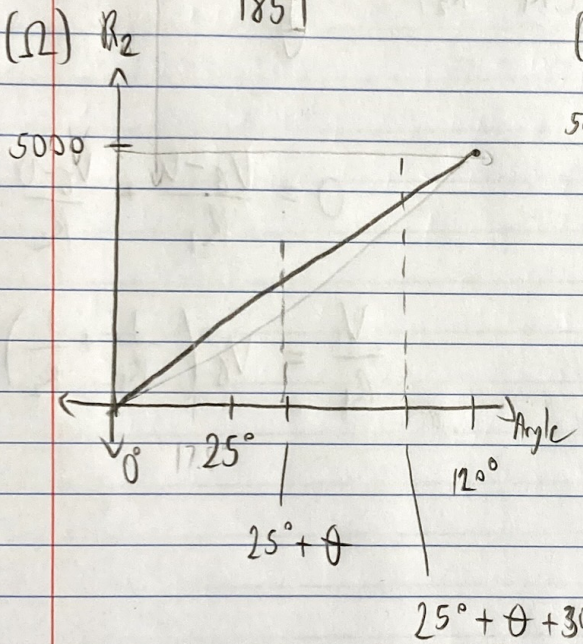
$$\frac{4V}{3R} = V_B\left(\frac{4}{3R} + \frac{3\cdot 4}{3\cdot R}\right) \qquad \frac{4V}{3R} = V_B\left(\frac{16}{3R}\right) \qquad \frac{V}{4} = V_B$$



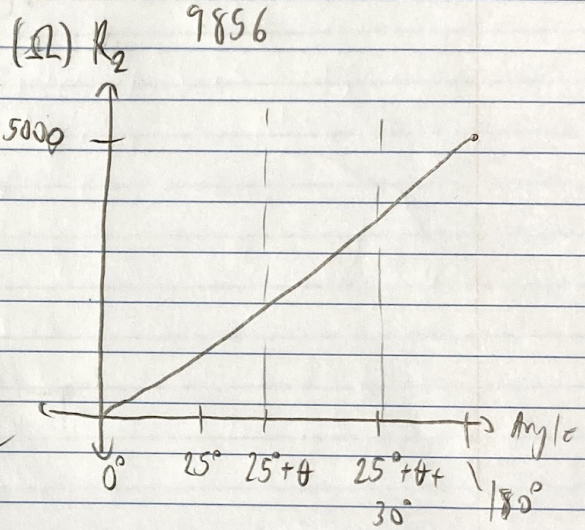
Assume $0V \rightarrow V_{tot}V$ is over the mechanical rotation

θ = starting angle

9851



9856



$$\frac{V}{\left(\frac{\alpha}{120^\circ}\right)(5000)}$$

$25^\circ + \theta + 30^\circ \leq 25^\circ + 85^\circ$

equations:

9851

$$R_2 = \frac{5000\Omega}{120^\circ}\alpha$$

$25^\circ + \theta \leq \alpha \leq 55^\circ + \theta$

9856

$$R_2 = \frac{5000\Omega}{180^\circ}\alpha$$

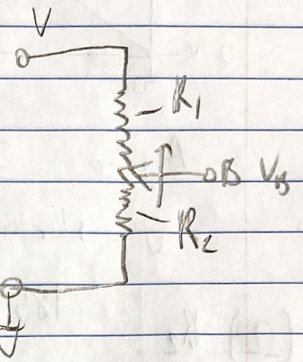
$25^\circ + \theta \leq \alpha \leq 55^\circ + \theta$

$$0 = \frac{V_B - V}{R_1} + \frac{V_B}{R_2}$$

$$\frac{V}{R_1} = V_B\left(\frac{1}{R_1} + \frac{1}{R_2}\right)$$

$$V_B = \frac{V}{R_1\left(\frac{1}{R_1} + \frac{1}{R_2}\right)}$$

$R_1 = 5000 - R_2$



$$0 = \frac{V_B - V}{R_1} + \frac{V_B - 0}{R_2}$$

$$\frac{V}{R_1} = V_B\left(\frac{1}{R_1} + \frac{1}{R_2}\right) \checkmark$$