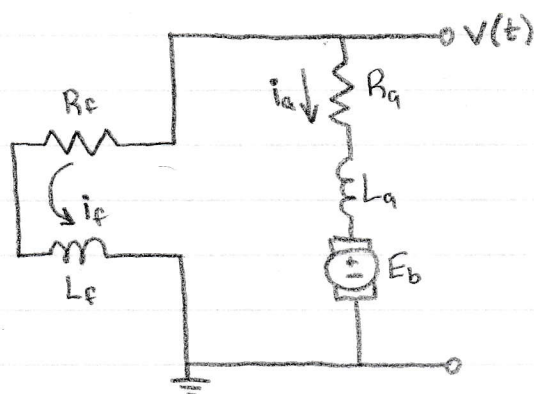e)

KVL on "f" loop:

$$V = R_f i_f + L_f \frac{di_f}{dt}$$

$$\frac{di_f}{dt} = (V - R_f i_f) \frac{1}{L_f}$$

KVL on "a" loop:

$$V = R_a i_a + L_a \frac{di_a}{dt} + E_b$$

$$\frac{di_a}{dt} = (V - E_b - R_a i_a) \frac{1}{L_a}$$

$$T_m = \frac{4}{9.73} T_{max} \rightarrow T_{max} = \frac{9.73}{4} T_m$$

$$F_{wheels} = \frac{4 T_{max}}{r_w} = \frac{4 \left(\frac{9.73}{4} \right) T_m}{r_w} = \frac{9.73 T_m}{r_w}$$