

Pre lab 1

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11:32 PM

$$G_w(s) = \frac{\Omega(s)}{R(s)} = \frac{A}{\tau s + 1} \leftarrow \text{transfer function for angular velocity}$$

$$\Omega(s) = \mathcal{L}\{\omega(t)\}$$

$$1) \omega(t) = \frac{d}{dt}(\theta(t))$$

$$\theta(t) = \int \omega(t)$$

$$\mathcal{L}(\theta(t)) = \frac{\Omega(s)}{s}$$

$$G_\theta(s) = \frac{\Omega(s)/s}{R(s)} = \frac{A}{\tau s^2 + s}$$

$$2) r(t) = U_0 u(t)$$

$$R(s) = \frac{U_0}{s}$$

$$f(\infty) = \lim_{s \rightarrow 0} s \frac{U_0}{s} \frac{A}{\tau s + 1}$$

$$\boxed{f(\infty) = AU_0}$$