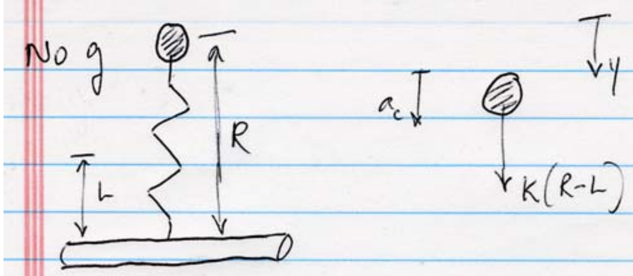


$$\Sigma F_y: \quad k(R-L) = ma_c = \frac{mV_T^2}{R} = \frac{m\omega^2 R^2}{R} = m\omega^2 R$$

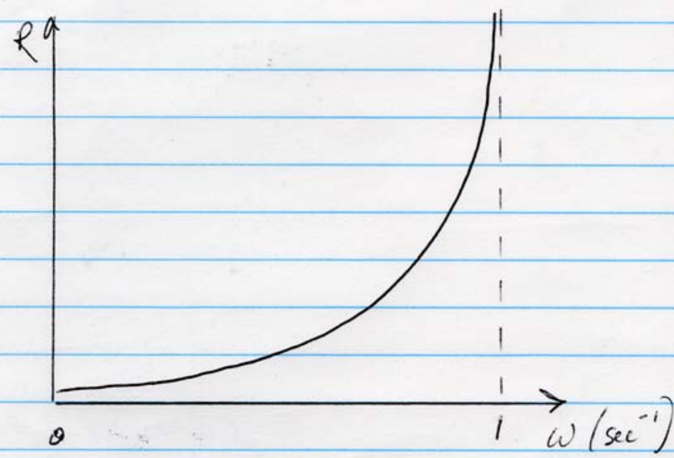
$$kR - kL = m\omega^2 R$$

$$R(k - m\omega^2) = kL$$

(a)

$$\boxed{R = \frac{kL}{(k - m\omega^2)}}$$

(b)



R asymptotically aproaches R = 0 at ω = 0 because the spring cannot have negative length. R asymptotically approaches ∞ as ω approaches ω = 1 sec⁻¹ because this is the ω for resonance.

Point distribution:

(a)

2 - FBD

2 - stretched length of spring = $(R-L)$

4 - $\Sigma F = m a_c$

2 - $a_c = v^2/R$

2 - $V_T = \omega R$

2 - Soln for $R = f(\omega)$

(b)

4 - graph

2 - comments

Σ : 20 pts.