

3-6-3

11/6/22

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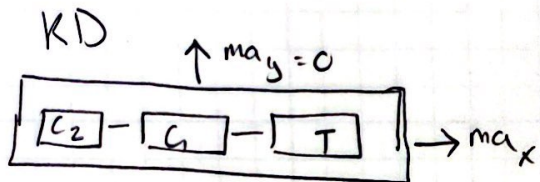
Problem) B: acceleration of the system  
D: the force in the coupling is.

R:)

FBD



KD



$$O: W_T = 432 \text{ lb}$$

$$W_{C_1} = 120 \text{ lb}$$

$$W_{C_2} = 169 \text{ lb}$$

$$\rightarrow = 74 \text{ lbs.}$$

$$W_{\text{Total}} = W_T + W_{C_1} + W_{C_2}$$

$$W = m \cdot g, \quad g = 32.2 \text{ ft/s}^2$$

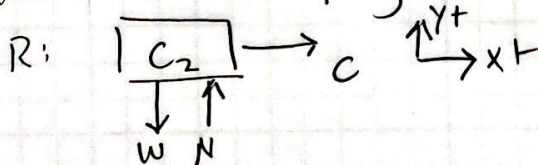
$$X: P = m \cdot a_x$$

$$Y: \text{Normal} - \text{Weight total} = 0_y$$

Solution B)

$$\text{acceleration} = m_{\text{total}} / \text{gravity}, \quad 721 / 32.2 = 22.39 \text{ slug.}$$

$$\text{so } a_x = \frac{\text{pull force}}{m_{\text{ax}}} = \frac{74}{22.39} = \boxed{3.31 \text{ ft/s}^2}$$

Solution D) coupling force of  $C_2$ 

$$\text{Mass of } C_2 = \frac{169}{32.2} = 5.25 \text{ slugs}$$

$$\Sigma X = m \cdot a_x$$

$$\Sigma y = N - W = m a_y$$

$$C = m \cdot a_x$$

$$= 5.25 \cdot 3.31 = 17.3775$$

$$C = 17.37236025$$

$$\boxed{= 17.416}$$