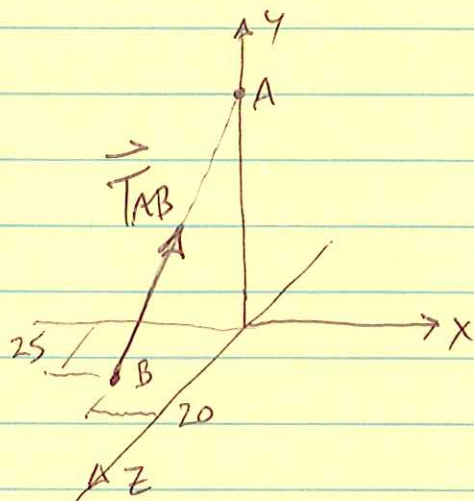


PROB. 2.87

$T_{AB} = 525 \text{ }^{\text{LB}}$ , FIND  $\vec{T}_{AB}$



LOCATE POINTS:

$A(0, 100, 0) \text{ }^{\text{ft}}$ ,  $B(-20, 0, 25) \text{ }^{\text{ft}}$

$dx = x_A - x_B = 0 - (-20) = 20 \text{ }^{\text{ft}}$

$dy = y_A - y_B = 100 - 0 = 100 \text{ }^{\text{ft}}$

$dz = z_A - z_B = 0 - 25 = -25 \text{ }^{\text{ft}}$

$d = \sqrt{20^2 + 100^2 + 25^2} = 105 \text{ }^{\text{ft}}$

$F_x = F \cdot \frac{dx}{d} = (525 \text{ }^{\text{LB}}) \left( \frac{20 \text{ }^{\text{ft}}}{105 \text{ }^{\text{ft}}} \right) = 100 \text{ }^{\text{LB}}$

$F_y = F \cdot \frac{dy}{d} = (525) \left( \frac{100}{105} \right) = 500 \text{ }^{\text{LB}}$

$F_z = F \cdot \frac{dz}{d} = (525) \left( \frac{-25}{105} \right) = -125 \text{ }^{\text{LB}}$

$\vec{T}_{AB} = (100) \hat{i} + (500) \hat{j} + (-125) \hat{k} \text{ }^{\text{LB}}$