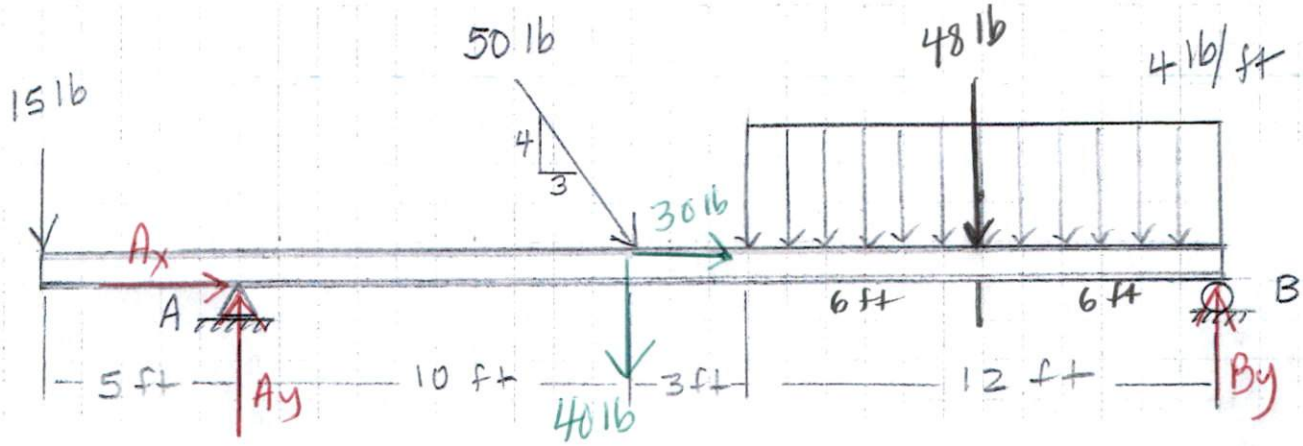
CMGT 350	Quiz #5	Fall 2022

SHOW ALL WORK FOR FULL CREDIT.

Name: Solution

1. Determine the reactions at the supports for the simply supported beam.



FBD

ccw +M ↺
cw −M ↻

Equilibrium Equations

$[\Sigma F_x = 0]$ $\quad A_x + 30\text{ lb} = 0$

$A_x = -30\text{ lb} \rightarrow$ and $\boxed{A_x = 30\text{ lb} \leftarrow}$

$[\Sigma M_A = 0]$ $\quad 15\text{ lb}(5\text{ ft}) - 40\text{ lb}(10\text{ ft}) - 48\text{ lb}(19\text{ ft}) + B_y(25\text{ ft}) = 0$

$$B_y = \frac{1237\text{ lb}\cdot\text{ft}}{25\text{ ft}} = \underline{49.48\text{ lb}}\ \uparrow$$

$[\Sigma F_y = 0]$ $\quad -15\text{ lb} + A_y - 40\text{ lb} - 48\text{ lb} + B_y = 0$

$$A_y = 103\text{ lb} - 49.48\text{ lb} = \underline{53.52\text{ lb}}\ \uparrow$$