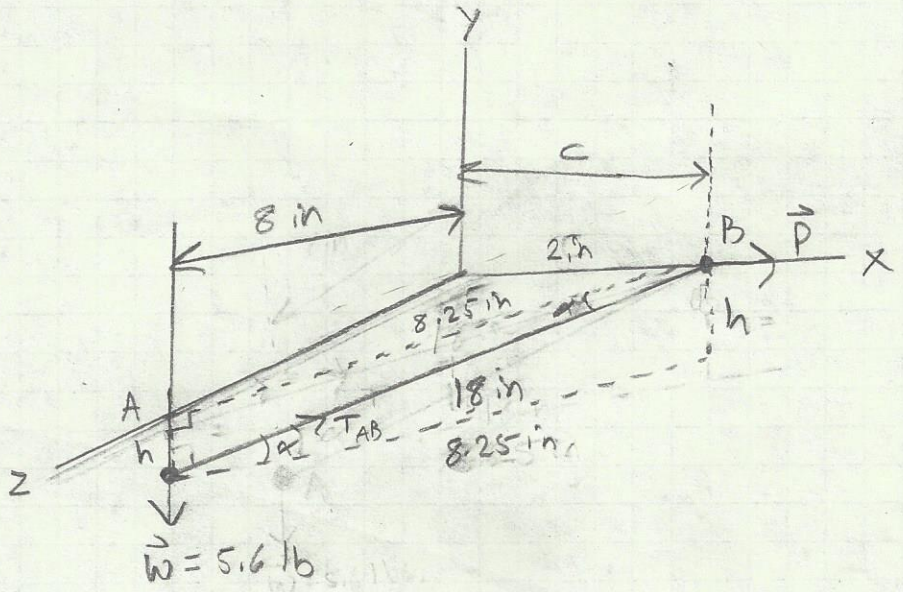
2.99



a) $T_{AB} = ?$ $C = 2$ in.

$(18\text{ in})^2 - (8.25\text{ in})^2 = h^2$ $\quad \sin\alpha = \frac{16\text{ in}}{18\text{ in}}$

$h = 16$ in $\quad \alpha = \sin^{-1}\left(\frac{16}{18}\right) = 62.7^\circ$

$T_{AB} \sin\alpha = 5.6$ lbs

$T_{AB} \sin 62.7^\circ = 5.6$ lbs

$T_{AB} = \frac{5.6\text{ lbs}}{\sin 62.7^\circ} = \boxed{5.96\text{ lbs}}$

$8^2 + 8^2 = x^2$

$x = 11.3$ in

b) $C = 8$ in

$(18\text{ in})^2 - (11.3\text{ in})^2 = h^2$ $\quad h = 14$ in $\quad \sin\alpha = \frac{14\text{ in}}{18\text{ in}}$

$\alpha = \sin^{-1}\left(\frac{14}{18}\right) = 51.1^\circ$

$T_{AB} = \frac{5.6\text{ lbs}}{\sin 51.1^\circ} = \boxed{7.2\text{ lbs}}$