A 75.0 kg sign hangs from a 4.80 m uniform horizontal rod whose mass is 120 kg. The rod is supported by a cable that makes an angle of 33° with the rod. See figure. The sign hangs 3.60 m out along the rod.

A. What is the tension in the cable?

\[ \text{TRANS. } X: P_H - T \cos 33° = 0 \quad (1) \]
\[ \text{VER. } Y: P_V + T \sin 33° - W_{\text{sign}} = 0 \quad (2) \]

\[ \text{ROT: AS pivot point} \]
\[ -W_L (3.40 m) + T (2.40 m \cos 33°) = W_s (3.60 m) \]
\[ \begin{align*}
T &= (1176 N)(0.40) + (735 N)(3.60) \\
&= (240 N)(1.8)
\end{align*} \]

\[ T = 880 N \quad \text{11 Pts.} \]

B. What are the forces \( P_v \) and \( P_h \) exerted by the wall on the left end of the rod?

\[ \text{FROM (1) ABOVE} \]
\[ P_V = T \cos 33° = (880 N)(0.8) \]
\[ P_V = 710 N \quad \text{11 Pts.} \]

\[ \text{FROM (2) ABOVE} \]
\[ P_H = W_{\text{sign}} - T \sin 33° \]
\[ = 1176 N - 3280 N \]
\[ P_V = 362 N \quad \text{NOTE: \( P_V \) points down} \]

\[ \text{11 Pts.} \]