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$$W = 250(9.81) = 2452.50 \text{ N}$$

From a free-body diagram of the pulley

$$\rightarrow \Sigma F_x = 0: \quad T \cos \phi - T \cos \theta = 0$$

$$\uparrow \Sigma F_y = 0: \quad T \sin \phi + T \sin \theta - 2452.50 = 0$$

$$\phi = \theta$$

From the geometry of the cable

$$a + b = 42 \text{ m}$$

$$(a + b) \cos \theta = 40 \text{ m}$$

$$\theta = \cos^{-1} \frac{40}{42} = 17.7528^\circ$$

Also from the geometry of the cable

$$h = a \sin \theta = 6 + b \sin \theta$$

Therefore

$$(a - b) = 6 / \sin \theta = 19.67789 \text{ m}$$

which together with $a + b = 42 \text{ m}$ gives

$$a = 30.83895 \text{ m}$$

$$b = 11.16105 \text{ m}$$

$$x = a \cos \theta = 29.4 \text{ m} \quad \text{..... Ans.}$$

$$T = 4020 \text{ N} \quad \text{..... Ans.}$$

