$T_1 = 128.5\ N \quad T_2 \doteq 251.5\ N \quad T_3 = 374.6\ N$

The angle is: $\theta \doteq \frac{\Delta x_3 - \Delta x_1}{\ell} = \frac{246.1\ N}{k \cdot 2.3m}$

$\doteq 107\ k\ N/m$

When $k \Rightarrow \infty \quad \theta = \tan^{-1}(107\ k\ N/m) = 0.$