

### Homework H2.B

**Given:** A powerline is extended from a house to the utility pole that is located at a distance  $L$  from the house. The line sags at an angle of  $\beta$  at the attachment point to the house and carries a tension of  $T$ .

**Find:**

- The angle  $\phi$ .
- The  $xyz$ -components of the tension force acting on the house.
- Express the tension force as a vector.

Use the following parameter values in your analysis:  $\beta = 6^\circ$ ,  $T = 150$  lb,  $h = 15$  ft,  $d = 120$  ft and  $b = 50$  ft.

