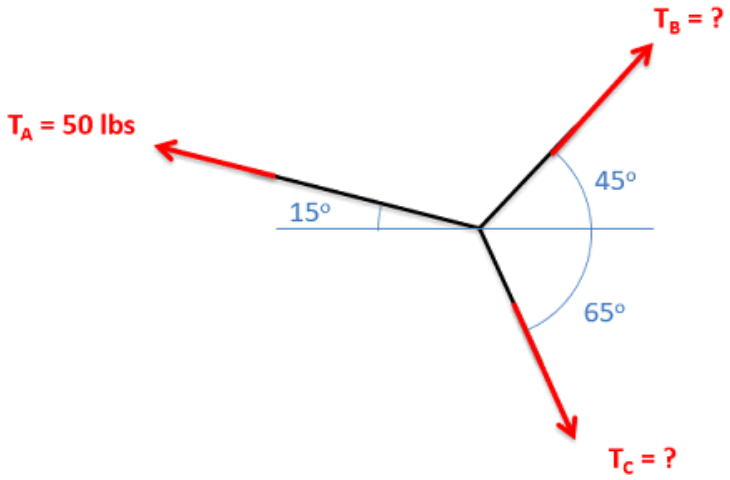
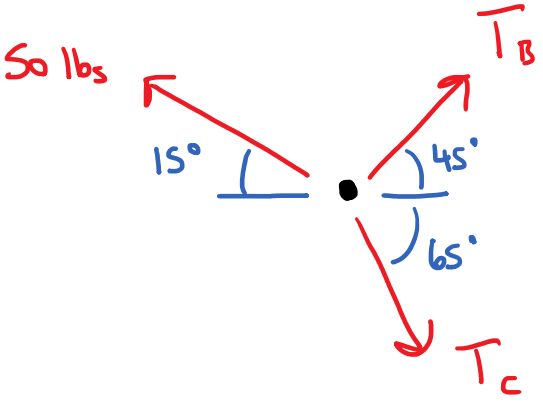
Question 4

Three cables come together at the angles indicated. The tension in cable A is 50 lbs. Determine the tension in the other two cables.





$$\Sigma F_x = -50\cos(15) + T_B\cos(45) + T_C\cos(65) = 0$$

$$\Sigma F_y = 50\sin(15) + T_B\sin(45) - T_C\sin(65) = 0$$

$$T_B = \frac{50\cos(15) - T_C\cos(65)}{\cos(45)}$$

$$50\sin(15) + \left(\frac{50\cos(15) - T_C\cos(65)}{\cos(45)}\right)\sin(45) - T_C\sin(65) = 0$$

$$\frac{50\sin(15) + 50\cos(15)}{\cos(65) + \sin(65)} = T_C = 46.1 \text{ lbs}$$

$$T_B = 40.8 \text{ lbs}$$