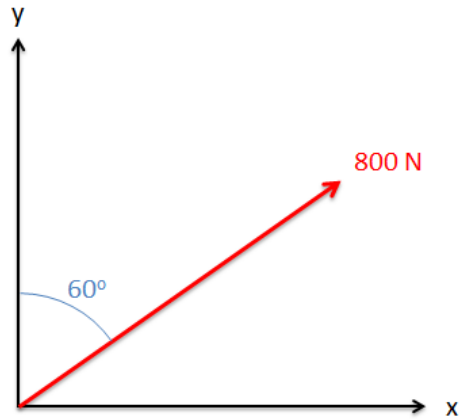


Appendix 1 Homework Problems

Problem A1.1

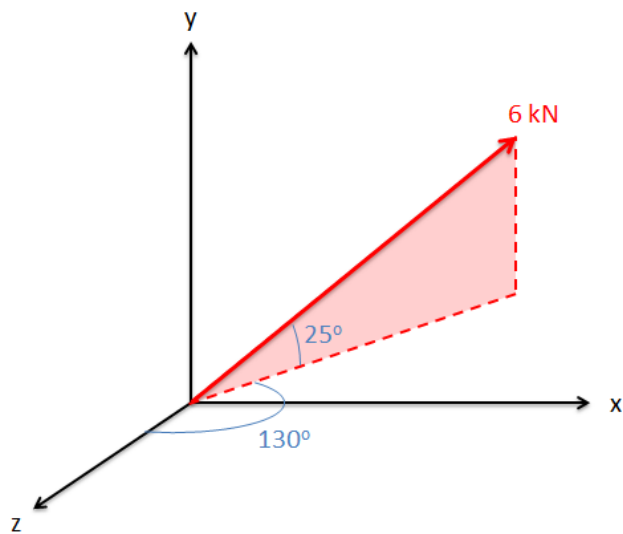
Determine the x and y components of the force vector shown below.



Solution: $F_x=692.8 \text{ N}$, $F_y=400 \text{ N}$

Problem A1.2

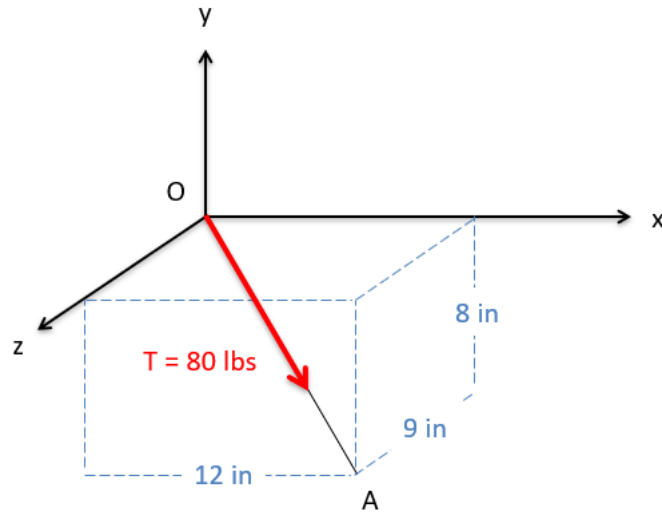
Determine the x, y, and z components of the vector shown below.



Solution: $F_x=4.17 \text{ kN}$, $F_y=2.54 \text{ kN}$, $F_z=-3.50 \text{ kN}$

Problem A1.3

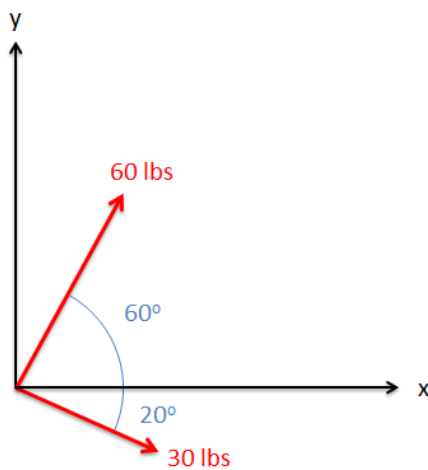
An 80 lb tension acts along a cable stretching from point O to point A. Based on the dimensions given, break the tension force shown into x, y, and z components.



Solution: $F_x = 56.47 \text{ lbs}$, $F_y = -37.64 \text{ lbs}$, $F_z = 42.35 \text{ lbs}$

Problem A1.4

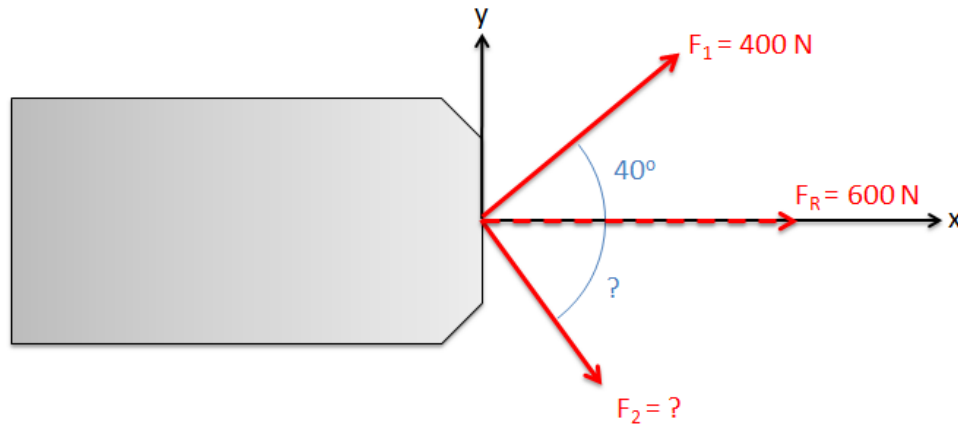
Determine the x and y components of the sum of the two vectors shown below.



Solution: $F_{\text{total}} = [58.2, 41.7] \text{ lbs}$

Problem A1.5

There are two forces acting on a barge as shown below (F_1 and F_2). The magnitude and direction of F_1 is known, but the magnitude and direction of F_2 is not. If the sum of the two forces is 600 N along the x-axis, what must the magnitude and direction of F_2 be?



Solution: $F_2 = 390.3 \text{ N}$ at 41.2° below the x axis