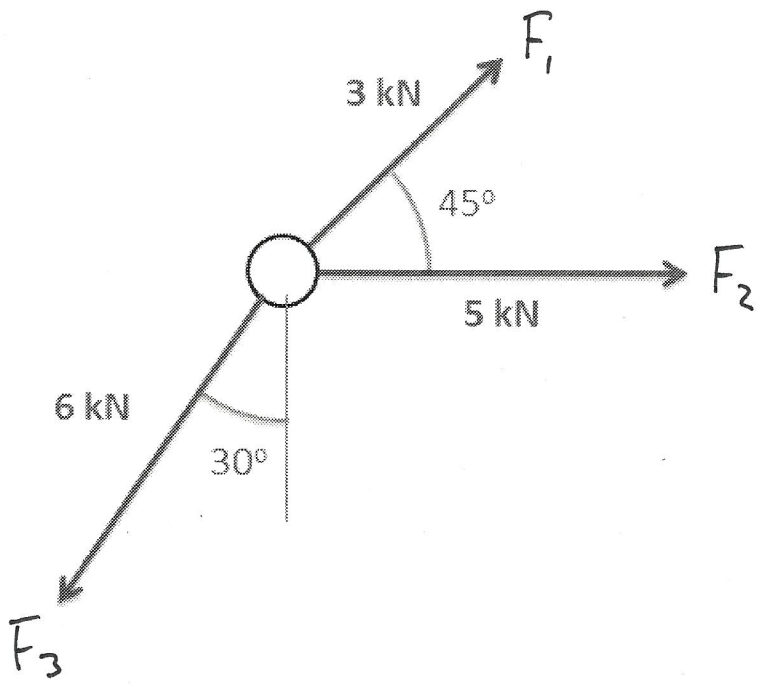
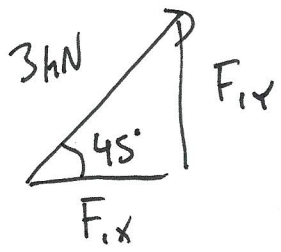
Question 1:

Determine the sum of the force vectors in the diagram below. Leave the sum in component form.



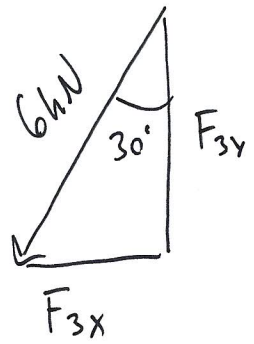


$F_{1X} = 3\cos(45) = 2.12\,kN$

$F_{1Y} = 3\sin(45) = 2.12\,kN$

$F_{2X} = 5kN$

$F_{2Y} = 0$



$$F_{3X} = -6\sin(30) = -3\ kN$$

$$F_{3Y} = -6\cos(30) = -5.20\ kN$$

$$F_{TX} = F_{1X} + F_{2X} + F_{3X}$$

$$F_{TX} = 2.12 + 5 - 3 = 4.12\ kN$$

$$F_{TY} = F_{1Y} + F_{2Y} + F_{3Y}$$

$$F_{TY} = 2.12 + 0 - 5.20 = -3.08\ kN$$

$$\boxed{F_T = [4.12, -3.08]\ kN}$$