



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Faculty of
Mechanical
Engineering

ASSIGNMENT 4 - RESULTANT 3D

SEMESTER II, SESSION 2016/2017

COURSE CODE : SKMM1203

COURSE NAME : STATICS (STATIK)

Name:

Matrix Number:

Q1: The stock shown in Figure 1 is mounted on the lathe and subjected to a force of 60 N. Determine the coordinate direction angle β and express the force as Cartesian vector.

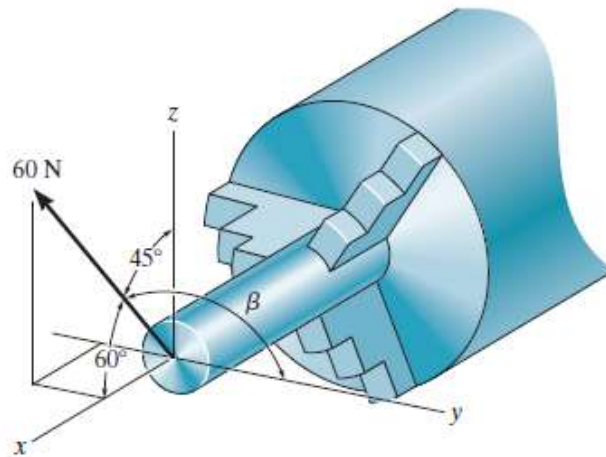


Figure 1

Q2:

- i. **Express each force as a Cartesian vector for force system shown in Figure 2.**
- ii. **Determine the magnitude and coordinate direction angles of the resultant force acting on the hook.**

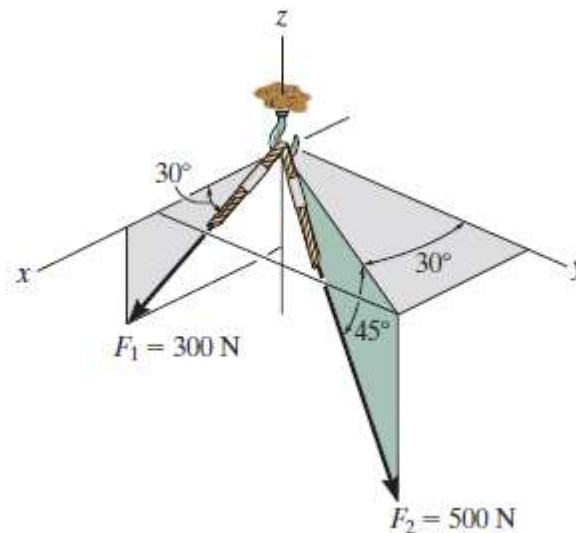


Figure 2

Q3: The cable BC carries a tension of 750 N as shown in Figure 3. Write this tension as a force T acting on point B in terms of the unit vectors i , j , and k . The elbow at A forms a right angle.

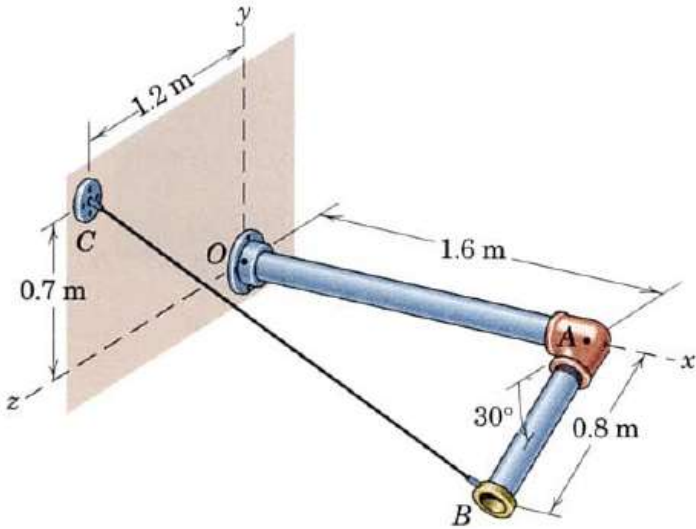


Figure 3

Q4: Determine the magnitude and coordinate direction angles of the resultant force on the eyebolt shown in Figure 4.

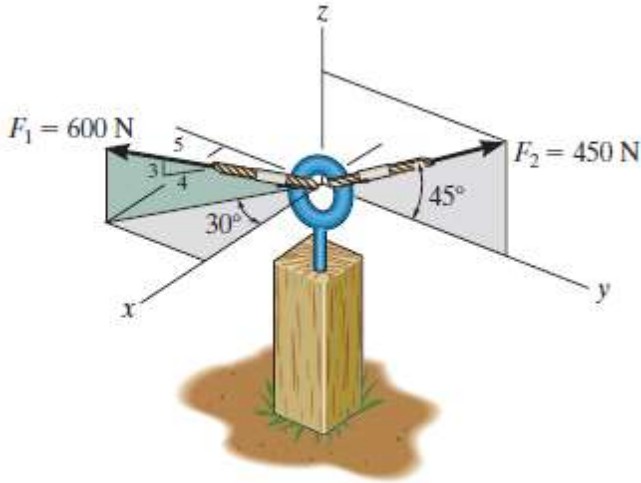


Figure 4

Q5: Three forces act on the ring as shown in Figure 5. If the resultant F_R has a magnitude and direction as shown, determine the magnitude and the coordinate direction angles of force F_3 .

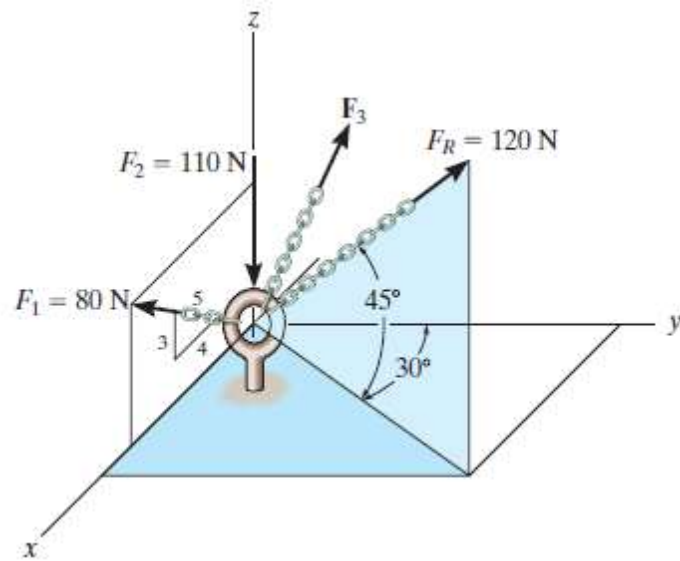


Figure 5

Q6: Determine the magnitude and coordinate direction angles of the resultant force acting at A as shown in Figure 6.

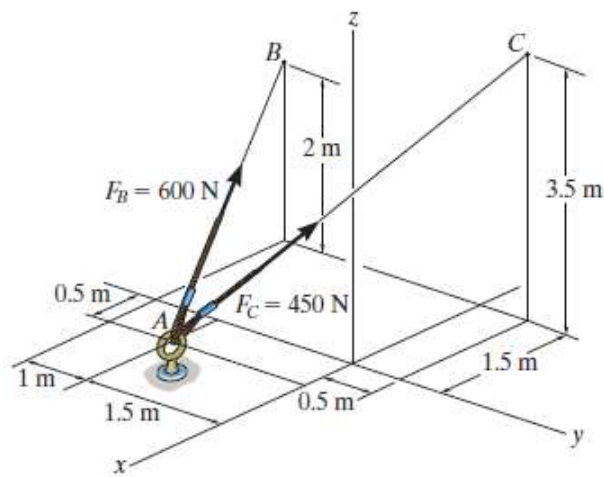


Figure 6

Q7: The tower is held in place by three cables. If the force of each cable acting on the tower is shown in Figure 7, determine the magnitude and coordinate direction angles α , β , γ of the resultant force. Take $x = 20$ m and $y = 15$ m.

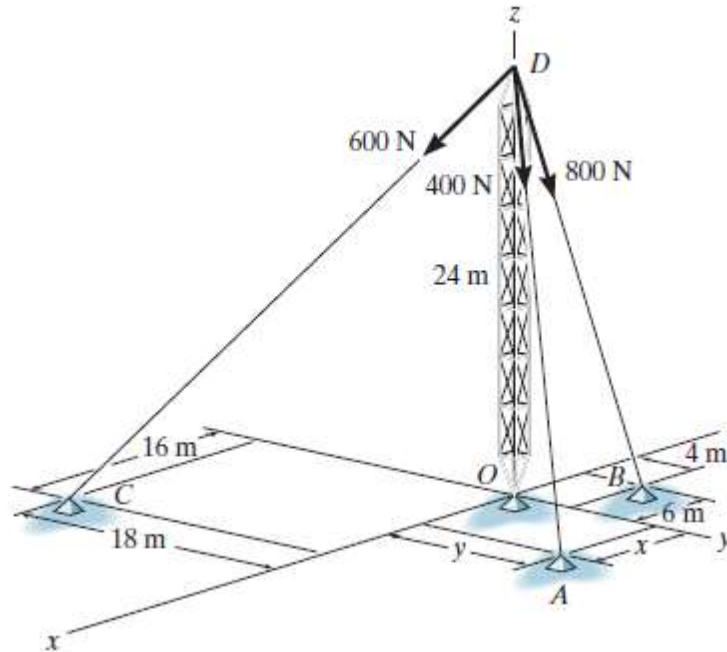


Figure 7

