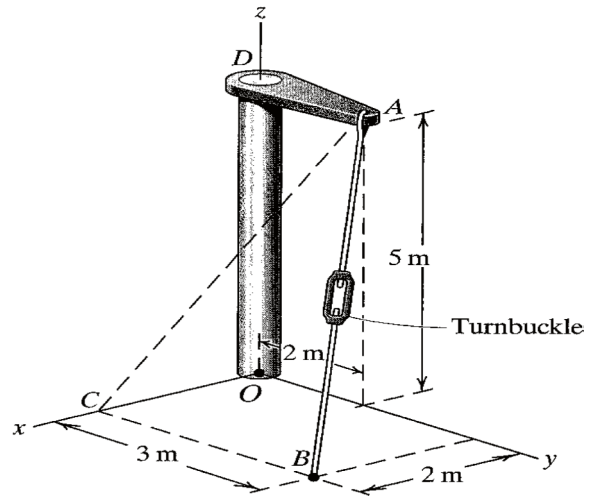


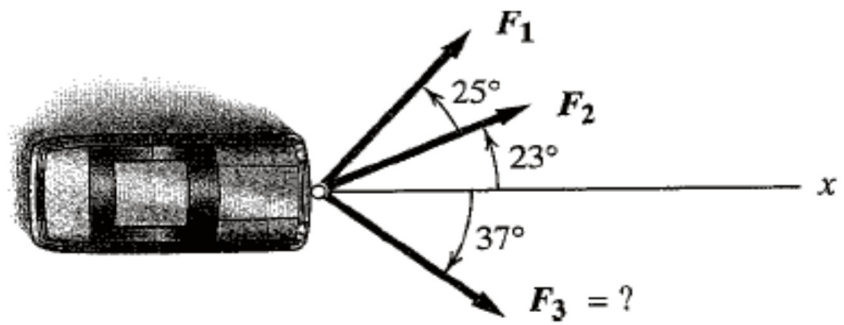
## Homework SET 1

1. The turnbuckle is tightened until the force in the cable is 300 N.  
(a) Express the position of  $A$  as a vector using Cartesian component

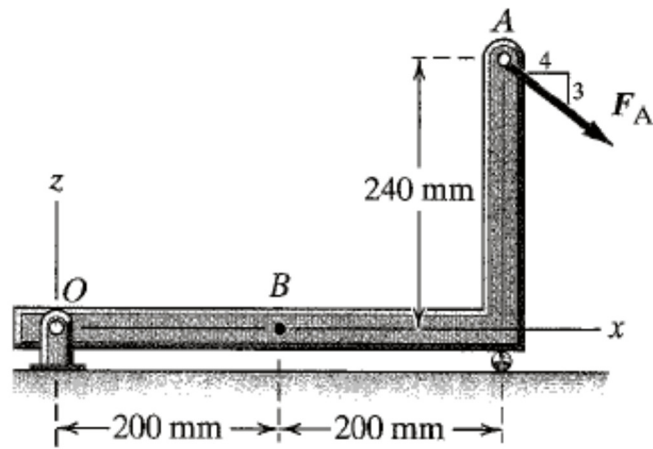


- (b) Express the position of  $B$  as a vector using Cartesian component
- (c) Express the vector from  $A$  to  $B$  using Cartesian component
- (d) Express the unit vector pointing from  $A$  to  $B$  using Cartesian components.
- (e) What is the angle that vector from  $A$  to  $B$  makes with  $z$  axis?
- (f) The force exerted by the cable on bar  $AD$  points from  $A$  to  $B$ . What is the scalar component of this force in the direction of a line from  $O$  to  $B$ ?

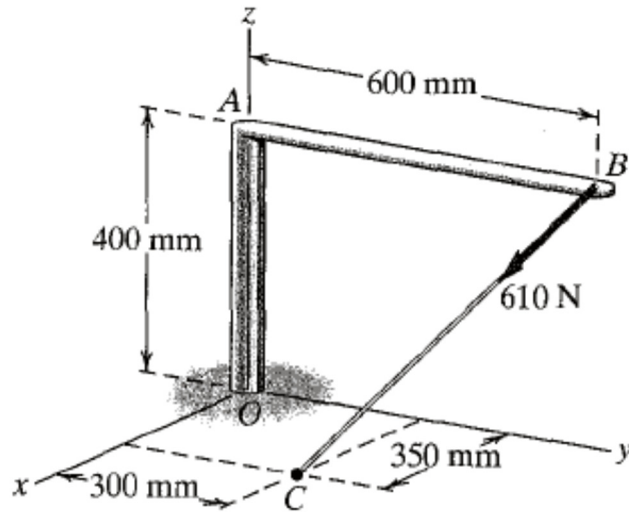
2. The resultant force applied to the car is along the  $x$  axis. What is  $F_3$ ?



3. If the force  $F_A$  has a magnitude of 750 N, what is its moment about point  $O$ ?



4. What is the moment (vector) of the 610 N force about line  $OA$ ?



5. Consider the system of six forces applied to the structure shown.  
 (a) What is the resultant of all the forces shown?  
 (b) For all the forces shown, what is the net moment about the  $y$  axis?

