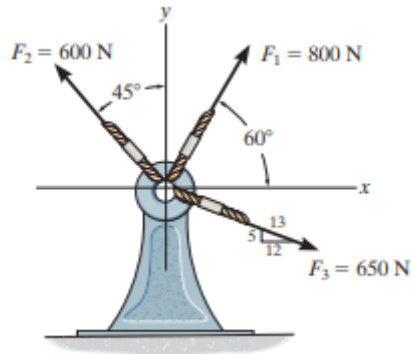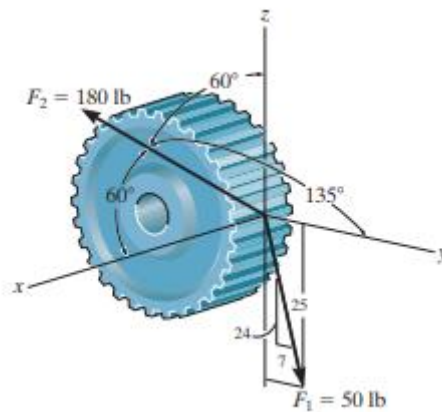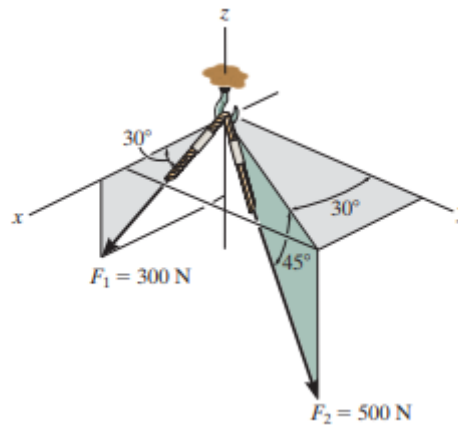1. Determine the magnitude of the resultant force and its direction u, measured counter clockwise from the positive x axis.


2. The spur gear is subjected to the two forces caused by contact with other gears. Express each force as a Cartesian vector.

3. Determine the magnitude and coordinate direction angles of the resultant force acting on the hook.

4. If the direction of the resultant force acting on the eyebolt is defined by the unit vector u_{FR} = cos 30j + sin 30k, determine the coordinate direction angles of F_3 and the magnitude of F_R.

$F_3 = 800$ lb

$F_2 = 600$ lb

30°

$F_1 = 700$ lb
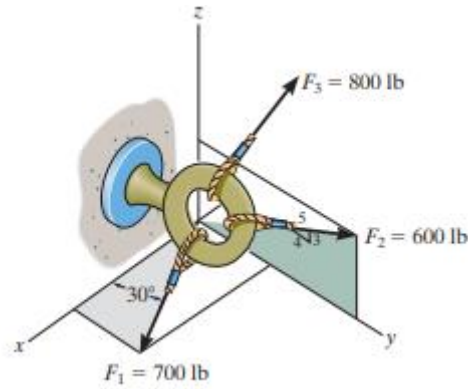
5. Express the position vector r in Cartesian vector form; then determine its magnitude and coordinate direction angles.

8 ft

B

2 ft

30°

20°

5 ft

A