Q 1 (6 pts):

If the magnitude of the resultant force acting on the eyebolt is (600 N) and its direction measured clockwise from the positive x axis is (30°). Determine the magnitude of \( F_1 \) and the angle \( \Phi \).

Solution:
Q 2 (7 pts):
Find the moment produced by the force \( F_{AB} \) about point \( O \).

Solution:
Q 3 (7 pts):

The spring has a stiffness of \( k=800 \text{ N/m} \) and an unstretched length of \( 200 \text{ mm} \). Determine the force in the cables (BC) and (BD) when the spring is held in the position shown.

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\text{Solution :}
\]
Q 4 (7 pts):
For the truss shown in figure. Determine the forces in members (GE), (GC), and (BC). Given that the supports are:
K – Pin (Hinge)
A – Roller

Solution:
Q 5 (7 pts):
Replace the distributed loadings shown in figure by a single equivalent resultant force, and specify where this force intersects member (AB) measured from point (B).

Solution:
Q 6 (6 pts):
For the beam shown in figure. Determine the reactions at the supports (A) and (B). Neglect the weight and thickness of the beam. Given that the supports are:
A – Roller
B – Pin (Hinge)

Solution: