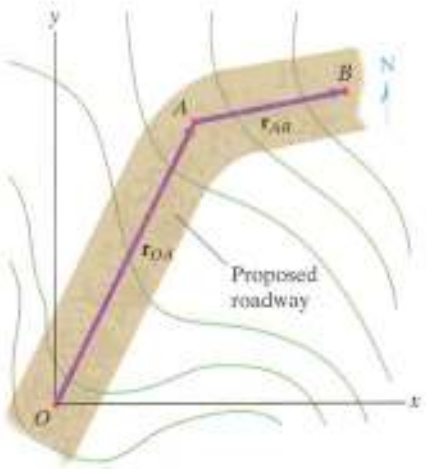
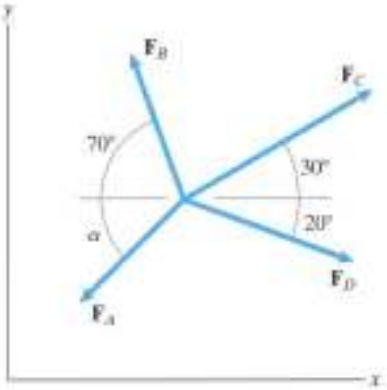
2.34

A surveyor measures the location of point A and determines $r_{OA} = 400\mathbf{i}+800\mathbf{j}$ (m). He wants to determine the location of a point B so that $|r_{AB}| = 400$ m and $|r_{OA} + r_{AB}| = 1200$ m. What are the Cartesian coordinates of point B.




2.46

Four groups engage in a tug-of-war. The magnitude of the forces exerted by groups B, C, and D are $|\mathbf{F}_B| = 800$-lb, $|\mathbf{F}_C| = 1000$-lb, and $|\mathbf{F}_D| = 900$-lb. If the vector sum of the four forces equals zero, what is the magnitude of $\mathbf{F}_A$ and the angle $\alpha$.




2.54

The cables A, B, and C help support a pillar that forms part of the supports of a structure. The magnitudes of the forces exerted by the cable are equal: $|\mathbf{F}_A| = |\mathbf{F}_B| = |\mathbf{F}_C|$. The magnitude of the vector sum of the three forces is 200-kN. What is $|\mathbf{F}_A|$?