

中國文化大學 九十四 學年度 第一學期 期中 考試試卷					
考試科目	任課老師	系級	考試日期	份數	備註
應用力學	陳為仁	機一 A	94/11/08	70	可用計算機

1. The force \vec{F} acting on the frame shown in Fig. 1 has a magnitude of 500 N and is to be resolved into two components along members AB and AC. (1) Determine the angle θ , measured below the horizontal, so that the component \vec{F}_{AC} is directed from A toward C, and (2) the component \vec{F}_{AB} by using the parallelogram law and trigonometry.

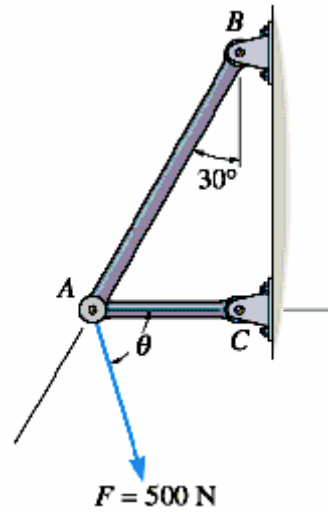


Fig.1

2. Two forces act on the joint shown in Fig. 2. (1) Express each force in Cartesian vector form, and (2) determine the magnitude and the coordinate direction angles of the resultant force.

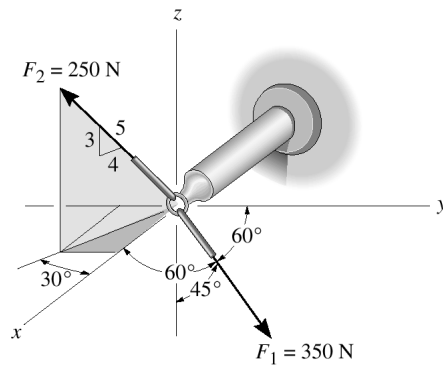


Fig. 2

3. The 300-kg engine supported by three cables AC, AB and AD as shown in Fig. 3 is in equilibrium. (1) Draw the free-body diagram for the ring at A. (2) Write down the two scalar equations of equilibrium. (3) Determine the tensions in cables AB and AD.

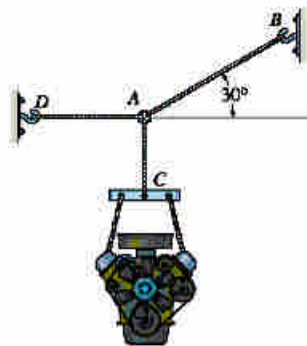


Fig. 3

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4. Determine the magnitudes of forces \vec{F}_1 , \vec{F}_2 and \vec{F}_3 for equilibrium of the particle shown in Fig. 4.

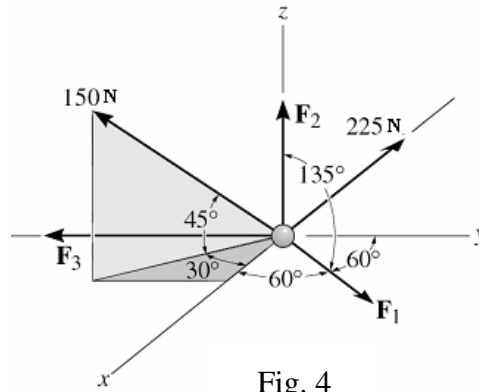


Fig. 4

5. The foot segment is subjected to the pull of two plantarflexor muscles as shown in Fig. 5. Determine the moment of each force about the point of contact A on the ground.

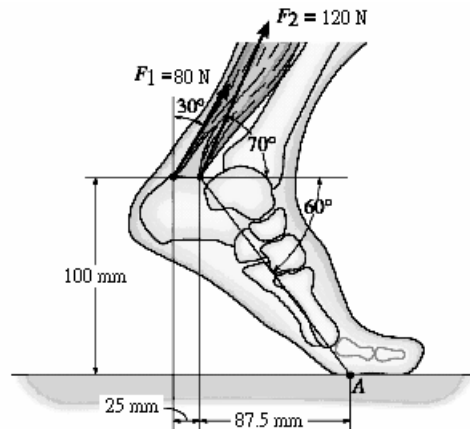


Fig. 5

6. Determine the moment of the force \vec{F} about the a-a axis shown in Fig. 6 and express the result as a Cartesian vector.

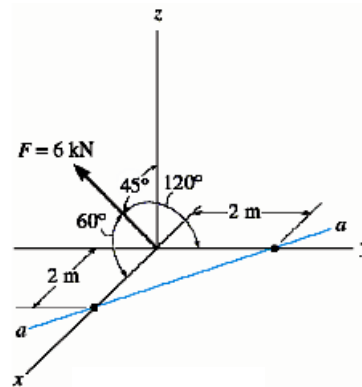


Fig. 6