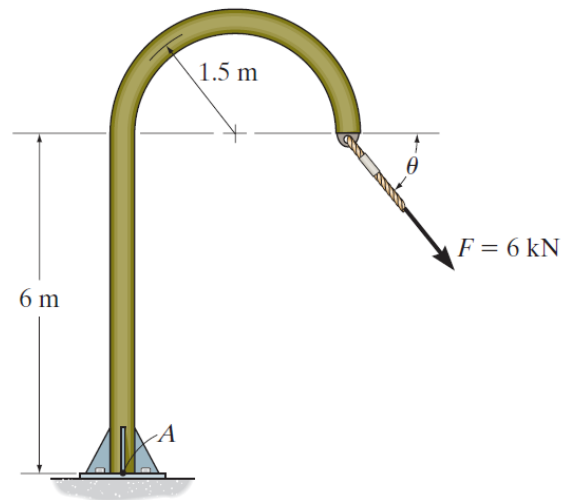


Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

S03: Equivalent Systems of Forces

1. The member is subjected to a force  $F = 6 \text{ kN}$ . If  $\theta = 45^\circ$ , determine the moment produced by  $F$  about point  $A$ . 【图示构件受到大小为  $6 \text{ kN}$  的力  $F$ ，若  $\theta = 45^\circ$  试求  $F$  对点  $A$  所产生的矩。】



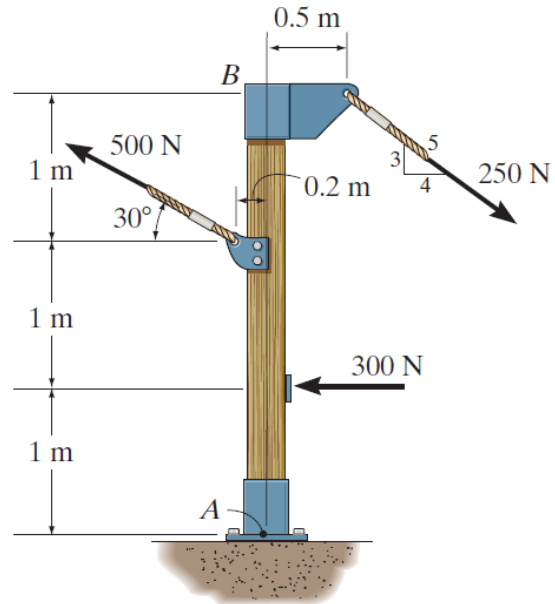
2. Prove the triple scalar product identity  $\mathbf{A} \cdot \mathbf{B} \times \mathbf{C} = \mathbf{A} \times \mathbf{B} \cdot \mathbf{C}$ . 【试证明混合积等式  $\mathbf{A} \cdot \mathbf{B} \times \mathbf{C} = \mathbf{A} \times \mathbf{B} \cdot \mathbf{C}$ 】

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S03: Equivalent Systems of Forces

3. Replace the force system acting on the post by a resultant force, and specify where its line of action intersects the post  $AB$  measure from point  $A$ . 【试将图示力系简化为一个单独的合力（无力偶矩），并求该力与柱  $AB$  的交点位置。】



4. Wind has blown sand over a platform such that the intensity of the load can be approximated by the function  $w = 0.5x^3$  N/m. Simplify this distributed loading to an equivalent resultant force and specify its magnitude and location measured from  $A$ . 【若图示平台所受荷载为  $w = 0.5x^3$  N/m 的分布力，试将该力系简化为一个单独的合力（无力偶矩），并求该力作用点位置（从  $A$  测量）。】

