

淡江大學 99 學年度轉學生招生考試試題

系別：機械與機電工程學系三年級 科目：工程力學 (含靜力學、動力學、材料力學)

本試題共 4 大題， 2 頁

1. Suppose that you pull on the cable OA in Fig.1, exerting a 50-N force F at O. What are the components of F parallel and normal to the cable OB? (25%)

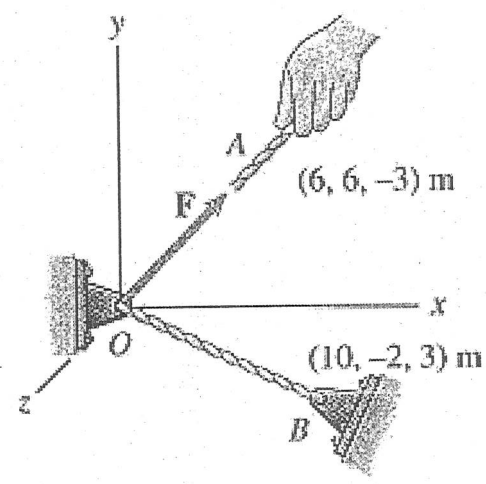


Fig.1

2. Bar AB in Fig.2 rotates with a clockwise angular velocity of 10 rad/s. What is the vertical velocity v_R of the rack and pinion gear? (25%)

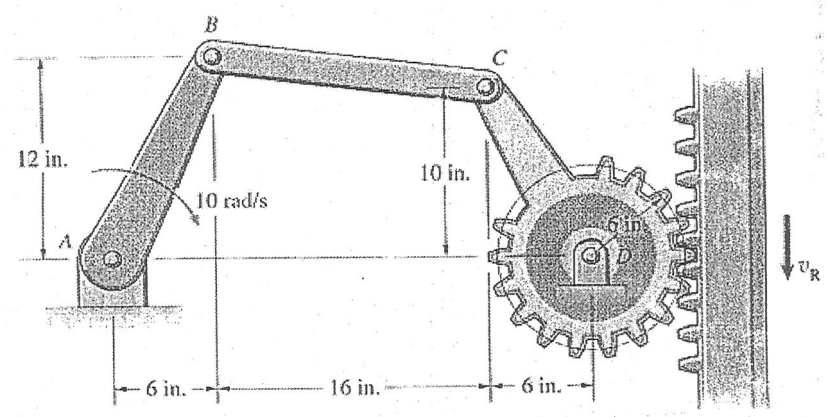


Fig.2

背面尚有試題

本試題雙面印刷

3. A beam ABC with an overhang at the left-hand end is shown in Fig.3. The beam is subjected to a uniform load of intensity $q=1.0$ k/ft on the overhang AB and a counterclockwise couple $M_0=12.0$ k-ft acting midway between the supports at B and C. Draw the shear-force and bending-moment diagrams for this beam. (25%)

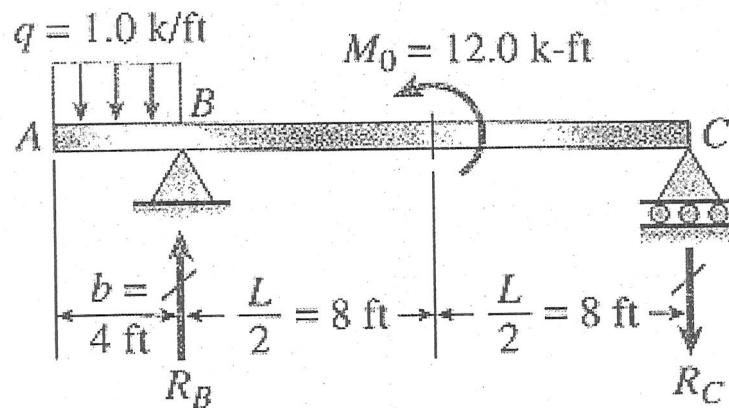


Fig.3

4. The bars OP and PQ in Fig.4 rotate in the x-y plane with constant angular velocities. In terms of the fixed coordinate system shown, what is the acceleration of point Q relative to the fixed point O? (25%)

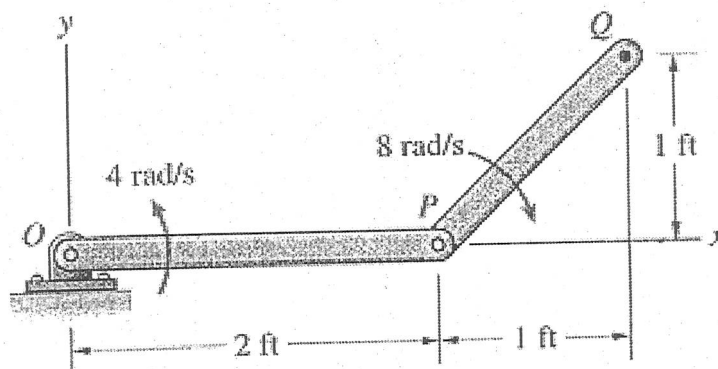


Fig.4