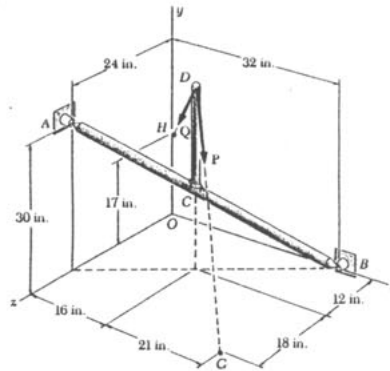1. (20pts) Please explain the following terms:
    (a) The principle of transmissibility, (b) Theorem of Pappus-Guldinus, (c) Simple truss,
    (d) Angle of friction, (e) Parallel-axis theorem.

2. (20pts) The 23-in. vertical rod CD is welded to the midpoint C of the 50-in. rod AB.
    Determine the moment about AB of the 235-lb force **P**.

3. (20pts) The bent rod ABC is hinged to a vertical wall by means of two bracket and bears at C
    against another vertical wall. The upper bracket fits in a groove in the rod to prevent the rod
    from sliding down. Neglecting friction, determine the reaction at C when a 150-N load is
    applied at D as shown.
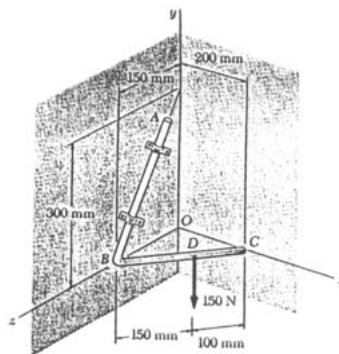
4. (20ts) Determine the magnitude of the gripping forces produced when two 60-lb forces are
    applied as shown.
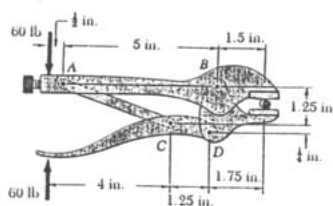
5. (20pts) Determine the moment of inertia and radius of gyration of the shaded area shown with respect to the x axis.