

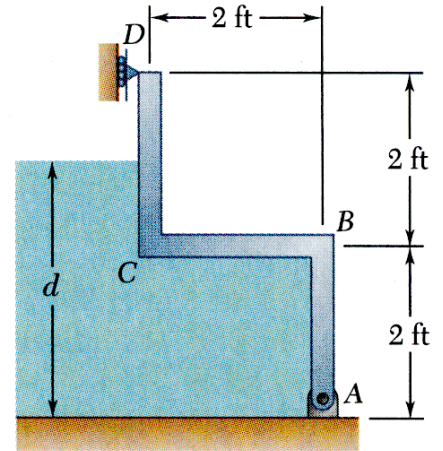
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Exam 4 – Fluid Pressure, Moment of Inertia

Name:

Section: J

1. The gate at the end of a 3-ft-wide fresh water channel is fabricated from three 240-lb, rectangular steel plates. The gate is hinged at A and rests against a frictionless support at D . Knowing that $d = 2.5$ ft, determine the reactions at A and D . Assume $\gamma = 62.4$ lb/ft³.



Write legibly – box answers
Include proper units

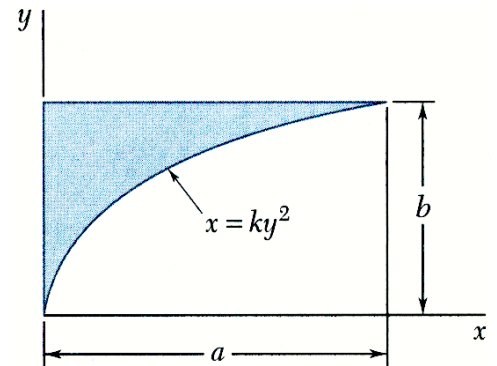
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2. Determine by integration the product of inertia I_{xy} of the shaded area with respect to the x and y axes.



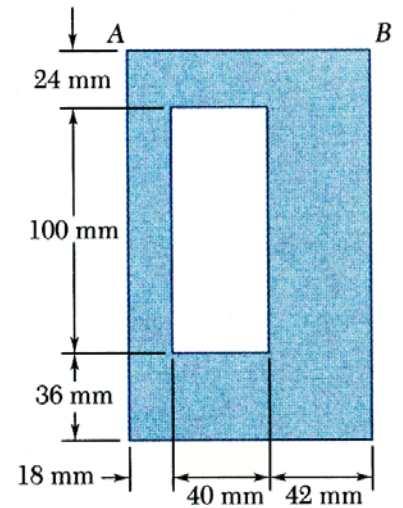
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3. Determine the moments of inertia I_x and I_y of the area shown with respect to **centroidal** axes respectively parallel and perpendicular to side AB .



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4. Determine the angle θ_p of the principal axes with origin located at point C and the principal moments of inertia I_{max} and I_{min} of the shaded area.

