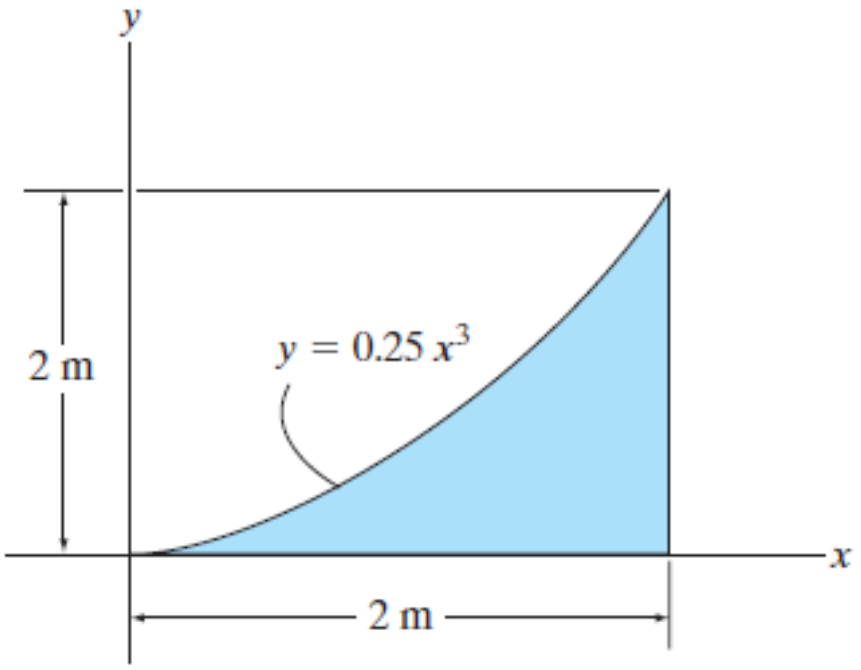
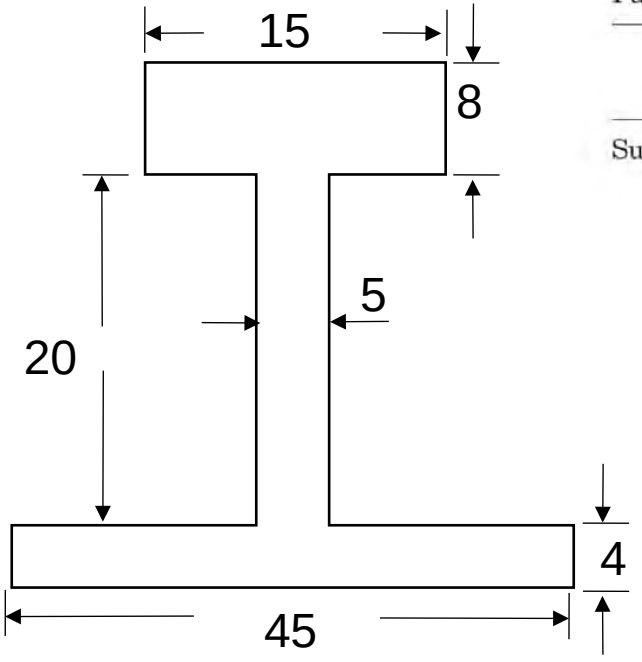
ME 201 Problem Hour

Inertia

•10–1. Determine the moment of inertia of the area about the x axis.

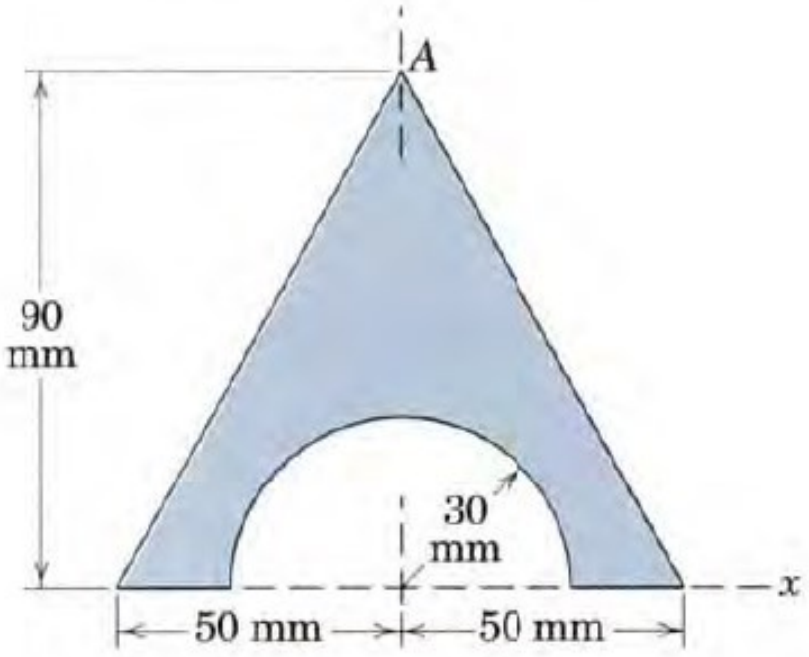


2. Determine the moment of inertia of the given composite area with respect to horizontal centroidal axis. (Note: Dimensions are in mm)



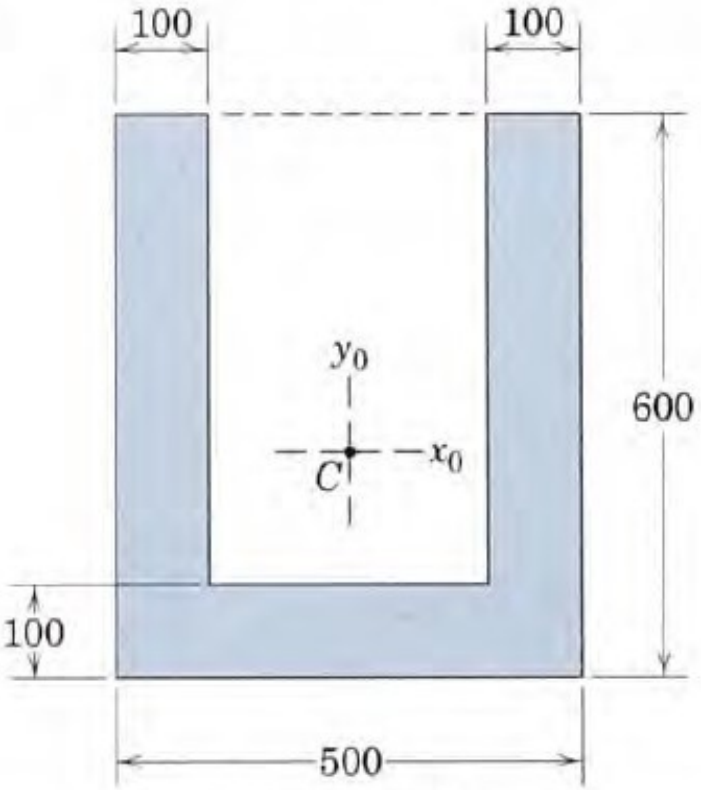
Part	Area, A	d_x	d_y	Ad_x^2	Ad_y^2	$\bar{I}_x$	$\bar{I}_y$
Sums	ΣA			ΣAd_x^2	ΣAd_y^2	$\Sigma\bar{I}_x$	$\Sigma\bar{I}_y$

A/40 Calculate the moment of inertia of the shaded area about the x-axis.



Problem A/40

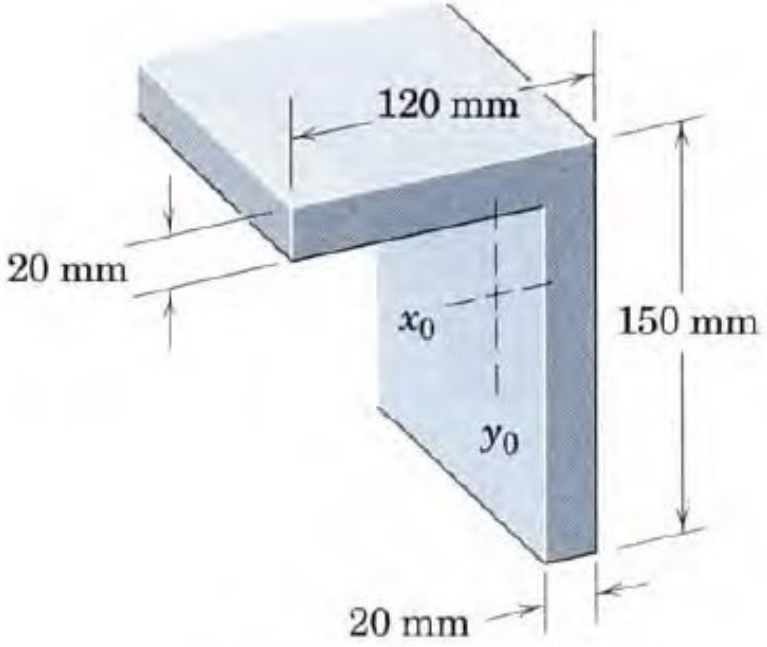
A/50 Calculate the polar radius of gyration of the shaded area about its centroid C.



Problem A/50

A/41 Calculate the moment of inertia of the cross section of the beam about its centroidal x_0-axis.

Ans. $\bar{I}_x = 10.76(10^6)$ mm^4



Problem A/41