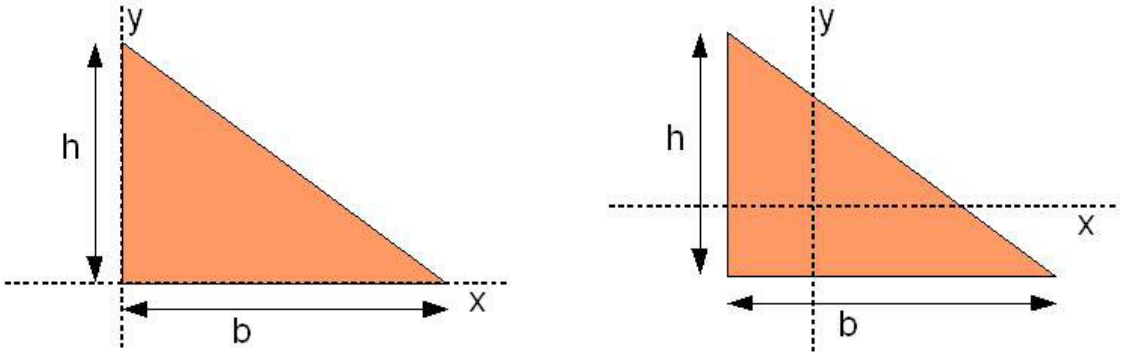
Moment of Inertia Calculation
Triangular Beam Bending About Centroidal Axes

Use the Parallel-Axes Theorem in reverse to find the area moment of inertia of a triangle about its centroid from the area moment of inertia about the baseline based on the previous calculations.



Solution:

Since

$$I_x = I_{x'} + Ad^2$$

then

$$I_{x'} = I_x - Ad^2$$

$$I_{x'} = \frac{1}{12}bh^3 - \frac{1}{2}bh\left(\frac{h}{3}\right)^2$$

And so,

$$I_x = \frac{1}{36}bh^3$$

This is the centroidal area moment of inertia for a triangle.

Note: there are a lot of words in that phrase: “centroidal area moment of inertia for a triangle.” You need to be able to have such a phrase roll off your tongue. Take a moment to make sure you understand what each of those words mean. And then take a moment to make sure you understand what b and h are.