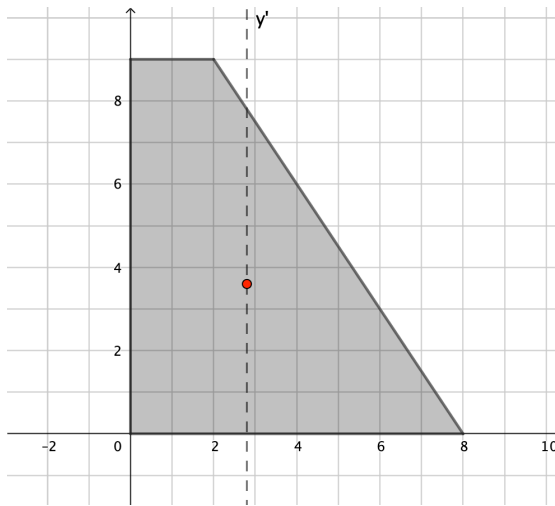


Example 2

Determine the moment of inertia of the composite shape about the centroidal y' axis. Grid units are [cm].



cm^2 A_i	cm \bar{x}_i	cm^3 $A_i \bar{x}_i$	cm^4 I_{y_i}
18	1	18	$\frac{1}{3}(9)(2)^3$ $= 24 \text{ cm}^4$
27	4	108	$\frac{1}{36}(9)(6)^3 + 27(4)^2$
<u>45</u>		<u>126</u>	$= 486 \text{ cm}^4$

$$\bar{X} = \frac{\sum A_i \bar{x}_i}{\sum A_i} = \frac{126}{45} = 2.8 \text{ cm}$$

$$I_y = I_{y_1} + I_{y_2}$$

$$= 24 + 486 = 510 \text{ cm}^4$$

$$I_y = \bar{I}_{y'} + A d^2$$

$$\bar{I}_{y'} = I_y - A d^2$$

$$= 510 - 45(2.8)^2$$

$$= \underline{\underline{157.2 \text{ cm}^4}}$$