

Name: \_\_\_\_\_ Section: \_\_\_\_\_

AEM 2011 Quiz #6  
Tuesday, February 28, 2023

A non-communicating calculator is allowed. Full credit will only be given if all steps used are clearly communicated (free body diagrams, algebra, etc).

- What are the coordinates of the centroid of the I-beam section shown?
- Say we wanted to use the method of composite parts to confirm our answer. Finish the table below calculate the I-beam centroid.

Component	$A_i$	$\bar{x}_i$	$\bar{y}_i$	$\bar{x}_i A_i$	$\bar{y}_i A_i$
Top Rectangle	$7 \text{ cm}^2$	$3.5 \text{ cm}$	$6.5 \text{ cm}$	$24.5$	$45.5$
Center Rectangle	$5 \text{ cm}^2$	$3.5 \text{ cm}$	$3.5 \text{ cm}$	$17.5$	$17.5$
Bottom Rectangle	$7 \text{ cm}^2$	$3.5 \text{ cm}$	$0.5 \text{ cm}$	$24.5$	$3.5$
<b>TOTALS:</b>	$\sum A_i = 19 \text{ cm}^2$			$\sum \bar{x}_i A_i = 66.5$	$\sum \bar{y}_i A_i = 66.5$

- $\bar{x} = \frac{\sum \bar{x}_i A_i}{\sum A_i} = \frac{66.5}{19} = 3.5 \text{ cm}$
- $\bar{y} = \frac{\sum \bar{y}_i A_i}{\sum A_i} = 3.5 \text{ cm}$

