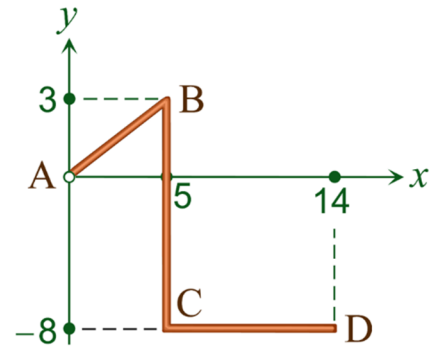


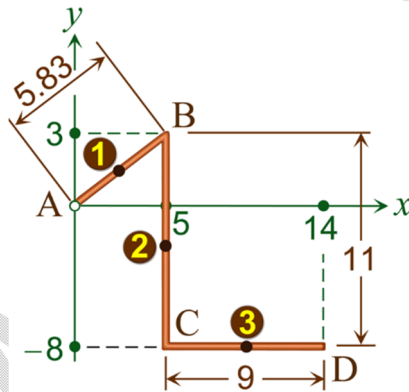
**STATICS**  
Center of Gravity  
Dr. Umit N. ARIBAS

**Question :** Locate the centroid of the homogeneous wire.



**Solution :**

Separate the homogeneous wire into linear parts in order to reduce the difficulty of the mathematical operations. Next, determine the centers of gravity for each linear segment as given below.



Segment	$L_i$	$x_i$	$y_i$	$x_i L_i$	$y_i L_i$
$\overline{AB}$	5.83	2.50	1.5	14.58	8.75
$\overline{BC}$	11.00	5.00	-2.5	55.00	-27.50
$\overline{CD}$	9.00	9.50	-8.0	85.50	-72.00
$\Sigma$	25.83			155.08	-90.75

The division of the summations on each separate axes to the total length will yield the center of gravity for the total wire.

- $\bar{x} = \frac{\sum x_i L_i}{\sum L_i} = \frac{155.08}{25.83} \cong 6.0 \text{ cm}$
- $\bar{y} = \frac{\sum y_i L_i}{\sum L_i} = \frac{-90.75}{25.83} \cong -3.5 \text{ cm}$