1 NCERT 12.10.5.9

Find the position vector of a point R which divides the line joining two points P and Q whose Position Vectors are $2\vec{a}+\vec{b}$ and $\vec{a}-3\vec{b}$ externally in the ratio $1:2$.Also, Show that P is the mid point of the line segment QR

Solution: The coordinates and ratio are given as Using section formula

Symbol	Value
$\vec{A}$	$2\vec{a}+\vec{b}$
$\vec{B}$	$\vec{a}-3\vec{b}$
k	2

$$\vec{C}=\frac{\vec{B}-k.\vec{A}}{1-k} \tag{1}$$

$$\vec{C}=\frac{(\vec{a}-3\vec{b})-2(2\vec{a}+\vec{b})}{1-2} \tag{2}$$

$$\vec{C}=3\vec{a}+5\vec{b} \tag{3}$$

Symbol	Value
$\vec{C}$	$3\vec{a}+5\vec{b}$

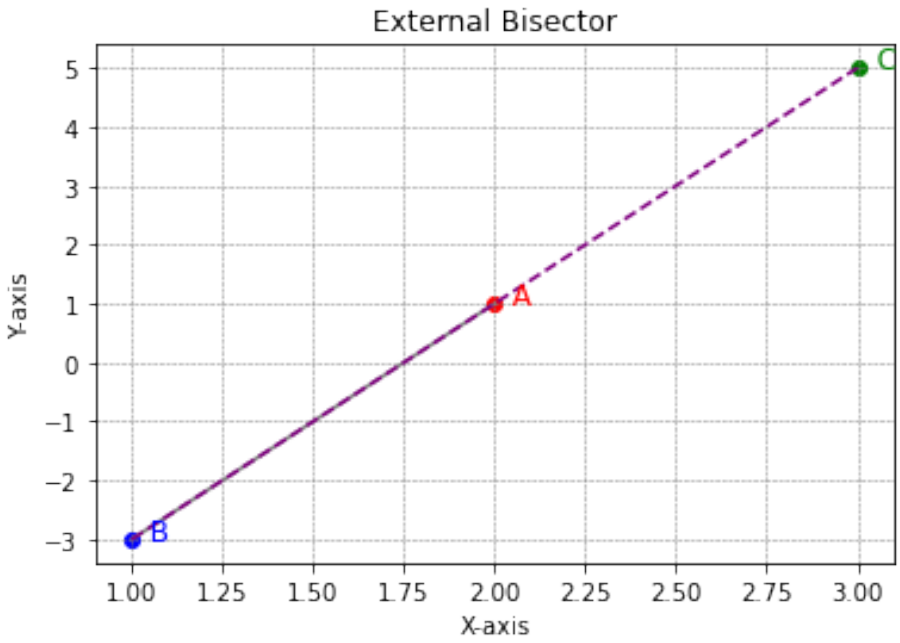

Figure 1: point vectors A,B,C