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 ration $1:2$.Also, Show that P is the mid point of the line segment BC
Solution: The coordinates and ratio are given as Using section formula

Symbol	Value
P	$2\vec{a}+\vec{b}$
Q	$\vec{a}-3\vec{b}$
n	$\frac{2}{1}$

$$\mathbf{R}=\frac{Q-n.P}{1-n} \tag{1}$$

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

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

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

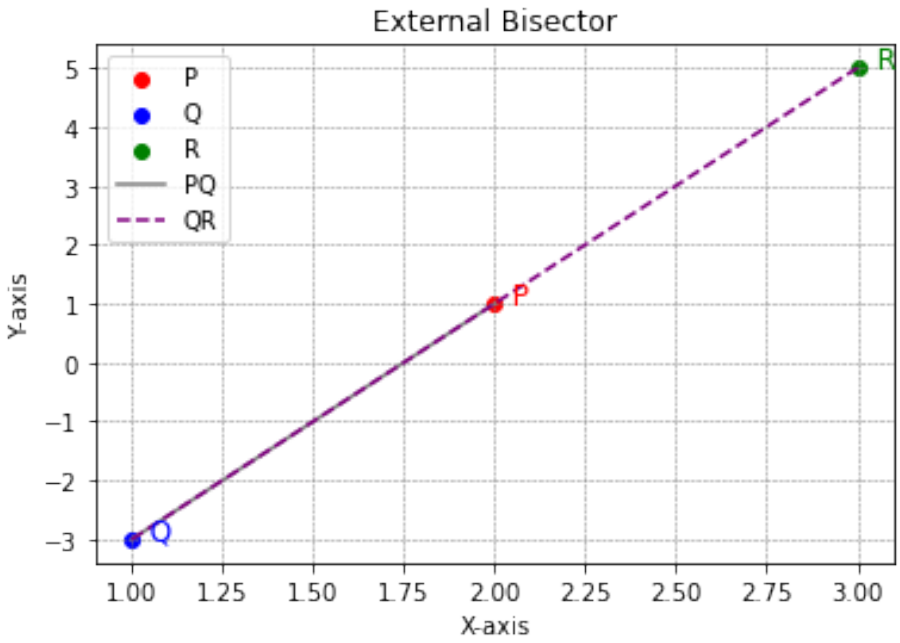

Figure 1: point vectors P,Q,R