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If A and B are the points (5,3) and (15,-7) respectively. Find the coordinates of the point which divides AB externally in the ratio 3:1

Solution

let the external division point be B

$P = \frac{b}{a+b}(A) + \frac{a}{a+b}(B)$

where $a=3$, $b=1$ $A(5,3)$ $B(15,-7)$

$P = \frac{1}{3+1}(5,3) + \frac{3}{3+1}(15,-7)$

$P = \frac{1}{4}(5,3) + \frac{3}{4}(15,-7)$

$P = \left(\frac{5}{4}, \frac{3}{4}\right) + \left(\frac{45}{4}, \frac{-21}{4}\right)$

$P = \left(\frac{5}{4} + \frac{45}{4}\right), \left(\frac{3}{4} - \frac{21}{4}\right)$

$P = \frac{50}{4}, \frac{-18}{4}$

$P = \frac{25}{2}, \frac{-9}{2}$ are the coordinates of the point that divides AB externally in the ratio 3:1