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DEPT: MECHATRONICS ENGINEERING

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\Rightarrow If A and B are the points (x_1, y_1) and (x_2, y_2) respectively.

Find the coordinates of the point which divides AB externally in the ratio $\vec{m} : \vec{n}$

$$\begin{aligned}\text{External division co-ordinates} &= \left[\frac{mx_2 - nx_1}{m - n}, \frac{my_2 - ny_1}{m - n} \right] \\ &= \left[\frac{3(15) - 1(5)}{3 - 1}, \frac{3(-7) - 1(3)}{3 - 1} \right] \\ &= \left[\frac{45 - 5}{2}, \frac{-21 - 3}{2} \right] \\ &= \left[\frac{40}{2}, \frac{-24}{2} \right] \\ &= [20, -12]_4\end{aligned}$$

\therefore The co-ordinates of the point which divides AB externally in ratio of 3:1 is $(20, -12)_4$