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

Solution.

Given: $x_1 = 5$, $x_2 = 15$, $y_1 = 3$, $y_2 = -7$, $K = 3$, $l = 1$

$x = ?$ $y = ?$ $K:l = 3:1$

Find (x, y)

$$x = \frac{lx_1 - Kx_2}{l - K} \quad \text{for external division.}$$

$$x = \frac{1(5) - 3(15)}{1 - 3} = \frac{+40}{+2} = 20$$

$$y = \frac{ly_1 - Ky_2}{l - K} = \frac{1(3) - 3(-7)}{1 - 3} = \frac{3 + 21}{-2}$$

$$y = \frac{24}{-2} = -12$$

$$(x, y) = (20, -12)$$

The coordinates of the point dividing AB externally in the ratio 3:1 is $(20, -12)$.