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1. A(5, 3) and B(15, -7). Ratio 3:2

Soln

$$\text{Coordinates} = \left(\frac{mx_2 - nx_1}{m-n}, \frac{my_2 - ny_1}{m-n} \right)$$

where m & n is the ratio m:n

$$\therefore m = 3 ; n = 2 ; x_1 = 5 \quad y_1 = 3$$

$$x_2 = 15, \quad y_2 = -7$$

$$\text{Coordinates} = \frac{3(15) - 2(5)}{3-2}, \frac{3(-7) - 2(3)}{3-2}$$

$$= \frac{45 - 10}{1}, \frac{-21 - 6}{1}$$

$$= (35, -27)$$