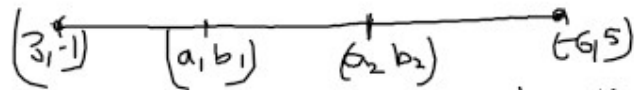


The line segment joining the points (3, -1) and (-6, 5) is trisected. The coordinates of point of trisection are

Question:

- A. (3, 3)
- B. (-3, 3)
- C. (3, -3)
- D. (-3, -3)

Answer:



 point of trisection divides the line in 1:2 & 2:1 ratio.

(a₁, b₁) is dividing in 1:2 ratio

$$m_1 : m_2 = 1 : 2$$

$$m_1 = 1 \quad x_2 = -6 \quad y_2 = 5$$

$$m_2 = 2 \quad x_1 = 3 \quad y_1 = -1$$

$$\begin{aligned}
 (a_1, b_1) &= \left(\frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} \right) \\
 &= \left(\frac{1(-6) + 2(3)}{1+2}, \frac{1(5) + 2(-1)}{1+2} \right) \\
 &= \left(\frac{-6+6}{3}, \frac{5-2}{3} \right)
 \end{aligned}$$

$$(a_1, b_1) = (0, 1)$$

(a₂, b₂) is dividing the line in 2:1 ratio

$$(a_2, b_2) = \left(\frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} \right)$$

$$m_1 = 2 \quad \& \quad m_2 = 1$$

$$\begin{aligned}
 (a_2, b_2) &= \left(\frac{2(-6) + 1(3)}{2+1}, \frac{2(5) + 1(-1)}{2+1} \right) \\
 &= \left(\frac{-12+3}{3}, \frac{10-1}{3} \right)
 \end{aligned}$$

$$= \left(\frac{-9}{3}, \frac{9}{3} \right)$$

$$(a_2, b_2) = (-3, 3)$$

\therefore Ans: Option (B)