Assignment-2 1-1.5-28

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Question: P(5, -3) and Q(3, y) are the points of trisection of the line segment joining A(7, -2) and B(1, -5). Theny equals

Solution: Given P(5, -3), A(7, -2), B(1, -5) and Q(3, y)

Also given that PandQ are the points of tricection of AB.

Let **Q** divides the line segment AB in the ratio k:1. That implies **P** divides line segment AB in the ratio 1:k.

$$\mathbf{P} = \frac{k\mathbf{A} + \mathbf{B}}{k+1}$$

On solve x coordinate we get k=2 Therefore **Q** divides AB in the ratio 2:1

$$\begin{pmatrix} 3 \\ y \end{pmatrix} = \frac{\mathbf{B} + \frac{1}{2}\mathbf{A}}{1 + \frac{1}{2} + 1}$$

$$y = -4.$$

Point	Description
P(5,-3)	This point divides $A(7,-2)$ and $B(1,-5)$ in the ratio 1:2
Q(3,-4)	This point divides $A(7,-2)$ and $B(1,-5)$ in the ratio 2:1

1

