1-1.4-9c

EE24BTECH11009 - mokshith kumar reddy

In what ratio does the point $(-4, 6)$ divide the line segment joining the points $A\,(-6, 0)$ and $B\,(3, -8)$?

Solution:

Variable	Description
C	given point
k	The ratio in which the given point divides the line segment

Let the given point divides the line segment AB in a ratio k:1.
using section formulae:
$C = \frac{A+kB}{1+k}$
by modifying it we get
$k = \frac{(B-C)^T(C-A)}{\|B-C\|^2}$ by substituting the values we get

$$k = \frac{\begin{pmatrix}7 & -14\end{pmatrix}\begin{pmatrix}2\\6\end{pmatrix}}{49 + 196} \tag{0.1}$$

$k = \frac{-2}{7}$
So, the given point divides the line segment AB in the ratio 2:7 externally.