

Find the ratio in which the line segment joining the points  $(1, -3)$  and  $(4, 5)$  is divided by X axis.

**Solution:** Let  $\mathbf{A} = \begin{pmatrix} 1 \\ -3 \end{pmatrix}$  and  $\mathbf{C} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$

Consider a point  $\mathbf{B} = \begin{pmatrix} x \\ 0 \end{pmatrix}$  on the X-axis. As the points  $\mathbf{A}, \mathbf{B}, \mathbf{C}$  are collinear The matrix

has rank 1.

Since the rank of the above matrix is 1,

Assume the ratio  $\mathbf{B}$  divides  $\mathbf{A}$  and  $\mathbf{C}$  be  $k:1$