Solutionbank M1

Heinemann Modular Maths for Edexcel AS and A-level

4 Forces

Exercise E, Question 7

Question:

The forces $\mathbf{F}_1 = \begin{bmatrix} x \\ 3 \end{bmatrix}$, $\mathbf{F}_2 = \begin{bmatrix} -7 \\ y \end{bmatrix}$ and $\mathbf{F}_3 = \begin{bmatrix} 6 \\ y \end{bmatrix}$ are in equilibrium. Find x and y.

Solution:

$$\begin{bmatrix} x \\ 3 \end{bmatrix} + \begin{bmatrix} -7 \\ y \end{bmatrix} + \begin{bmatrix} 6 \\ y \end{bmatrix} = 0$$

$$\begin{aligned} \therefore x - 7 + 6 &= 0 \\ \text{i.e. } x &= 1 \\ \text{and } 3 + y + y &= 0 \\ 2y &= -3 \\ y &= -1.5 \end{aligned}$$