

# Solutionbank M1

Heinemann Modular Maths for Edexcel AS and A-level

## 4 Forces

### Exercise E, Question 8

#### Question:

Three forces  $F_1$ ,  $F_2$  and  $F_3$  are in equilibrium. If  $F_1 = \begin{bmatrix} 4 \\ -7 \end{bmatrix}$  and  $F_2 = \begin{bmatrix} -6 \\ 8 \end{bmatrix}$ , find the magnitude of  $F_3$ .

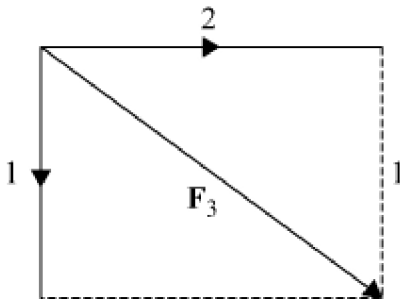
#### Solution:

$$\begin{bmatrix} 4 \\ -7 \end{bmatrix} + \begin{bmatrix} -6 \\ 8 \end{bmatrix} + F_3 = 0$$

$$\therefore F_3 = \begin{bmatrix} 2 \\ -1 \end{bmatrix}$$

$$\therefore |F_3| = \sqrt{2^2 + 1^2} = 2.2360\dots$$

$$\text{i.e. } |F_3| = 2.24 \text{ (3 s.f.)}$$



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