

Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

$$\begin{aligned} \bullet \sqrt{3^2 + 4^2} &= \sqrt{25} \\ &= \mathbf{5} \end{aligned}$$

2.2

$$\begin{aligned} \bullet \sqrt{(-5)^2 + 12^2} &= \sqrt{169} \\ &= \mathbf{13} \end{aligned}$$

2.3

$$\begin{aligned} \bullet \sqrt{6^2 + (-8)^2} &= \sqrt{100} \\ &= \mathbf{10} \end{aligned}$$

3.1

(a)

$$\begin{aligned} \bullet \text{ add the components separately} \\ \begin{pmatrix} 3 \\ 2 \end{pmatrix} \end{aligned}$$

(b)

$$\begin{aligned} \bullet \sqrt{3^2 + 2^2} &= \sqrt{13} \\ &= \sqrt{\mathbf{13}} \end{aligned}$$

• 13 has no square factor, so this is already exact

(c)

$$\begin{aligned} \bullet 2\mathbf{a} &= \begin{pmatrix} 8 \\ -6 \end{pmatrix}, \text{ so } 2\mathbf{a} - \mathbf{b} = \begin{pmatrix} 9 \\ -11 \end{pmatrix} \\ \bullet \sqrt{81 + 121} &= \sqrt{202} \\ &= 14.212 \dots = \mathbf{14.2} \end{aligned}$$

3.2

$$\begin{aligned} \bullet k^2 + 8^2 &= 17^2 \\ \bullet k^2 &= 289 - 64 = 225 \\ &= \mathbf{15} \end{aligned}$$