



Air maths tuition

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Surds | Past Exam Question | C1 Edexcel January 2013 Q3

(i) Express $(5 - \sqrt{8})(1 + \sqrt{2})$ in the form $a + b\sqrt{2}$, where a and b are integers.

$$\begin{aligned}(5 - \sqrt{8})(1 + \sqrt{2}) &= 5 + 5\sqrt{2} - \sqrt{8} - \sqrt{16} \\ &= 5 + 5\sqrt{2} - 2\sqrt{2} - 4 \\ &= 1 + 3\sqrt{2}\end{aligned}$$

$\sqrt{8} = \sqrt{4 \times 2}$
 $= \sqrt{4}\sqrt{2}$
 $= 2\sqrt{2}$

(ii) Express $\sqrt{80} + \frac{30}{\sqrt{5}}$ in the form $c\sqrt{5}$, where c is an integer.

$$\begin{aligned}\sqrt{80} + \frac{30}{\sqrt{5}} &= 4\sqrt{5} + \frac{30}{\sqrt{5}} \frac{\sqrt{5}}{\sqrt{5}} \\ &= 4\sqrt{5} + \frac{30\sqrt{5}}{5} \\ &= 10\sqrt{5}\end{aligned}$$

$\sqrt{80} = \sqrt{16 \times 5}$
 $= \sqrt{16}\sqrt{5}$
 $= 4\sqrt{5}$

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