



Air maths tuition

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Surds | Past Exam Question | C1 Edexcel June 2013 Q1

Simplify $\frac{7 + \sqrt{5}}{\sqrt{5} - 1}$ giving your answer in the form $a + b\sqrt{5}$, where a and b are integers. (4)

$$\begin{aligned}\frac{7 + \sqrt{5}}{\sqrt{5} - 1} &= \frac{7 + \sqrt{5}}{\sqrt{5} - 1} \times \frac{\sqrt{5} + 1}{\sqrt{5} + 1} \\ &= \frac{7\sqrt{5} + 7 + 5 + \sqrt{5}}{5 + \sqrt{5} - \sqrt{5} - 1} \\ &= \frac{12 + 8\sqrt{5}}{4} \\ &= \frac{4(3 + 2\sqrt{5})}{4} \\ &= 3 + 2\sqrt{5}\end{aligned}$$

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