O Level A Maths Tutorial 3: Surds

Syllabus :
• Four operations on surds*, including rationalising† the denominator

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* surds : a number that cannot be written exactly as a fraction or a whole number.
† rationalise : change to rational number

1. Simplify the following, giving the answers in surds.

(a) $\sqrt{8}$ (a) $\sqrt{18}$ (a) $\sqrt{72}$

2. Rationalise the following:

(a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{\sqrt{27}}$ (c) $\frac{1}{\sqrt{8}}$

3. Rationalise the following:

(a) $\frac{1}{2 - \sqrt{3}}$ (b) $\frac{\sqrt{2}}{\sqrt{2} - \sqrt{3}}$ (c) $\frac{1 - \sqrt{2}}{\sqrt{2} + \sqrt{3}}$

4. Simplify:

(a) $\sqrt{2} + \sqrt{18}$ (b) $\sqrt{27} + \sqrt{3}$

• Solving equations involving surds .

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5. Solve :

(a) $2\sqrt{x - 1} - 2\sqrt{12 - x} = 0$

(b) $\sqrt{x - 2} + 2 = \sqrt{3x - 2}$