Maths-it Podcast AS-01

AS Core Revision

Surds

Topics

Simplifying expressions involving surds – Solving equations involving surds

Questions

1. (a) Express $\frac{\sqrt{3}+9}{\sqrt{3}+3}$ in the form $p\sqrt{3}+q$, where p and q are integers.

(4)

(b) (i) Express $\sqrt{98}$ in the form $n\sqrt{2}$, where n is an integer.

(1)

(ii) Solve the equation

$$x\sqrt{8} = 5\sqrt{2} + \sqrt{14}$$

giving your answer in its simplest form.

(3)

(Total 8 marks)

2. Solve this equation,

$$x^2 = 4(x+4)$$

Give your answer in the form $p \pm q\sqrt{r}$, where p, q and r are integers.

(Total 3 marks)

3. (a) Express $\left(5\sqrt{10}-1\right)\left(2-\sqrt{10}\right)$ in the form $p+q\sqrt{10}$, where p and q are integers.

(3)

(b) Show that $\frac{\sqrt{45}+\sqrt{20}}{\sqrt{5}}$ is an integer and find it's value.

(3)

(Total 6 marks)

4. The point A has coordinates (8, 2) and the point B has coordinates (-2, -3).

Show that AB has length $k\sqrt{5}$, where k is an integer.

(Total 3 marks)

5. Solve the equation.

$$\frac{\sqrt{18}-3}{\sqrt{18}-2} = x(4-\sqrt{2})$$

Give your answer in the form $\frac{p}{q}$, where p and q are integers.

(Total 4 marks)