



Surds Exam Questions Sheet 2

Q1.

(a) Simplify $\sqrt{32} + \sqrt{18}$

giving your answer in the form $a\sqrt{2}$, where a is an integer.

(2)

(b) Simplify

$$\frac{\sqrt{32} + \sqrt{18}}{3 + \sqrt{2}}$$

giving your answer in the form $b\sqrt{2} + c$, where b and c are integers.

(4)

Total 6 marks

Q2.

Simplify

$$\frac{5 - 2\sqrt{3}}{\sqrt{3} - 1}$$

giving your answer in the form $p + q\sqrt{3}$, where p and q are rational numbers.

(4)

(Total 4 marks)

Q3.

Show that $\frac{2}{\sqrt{12} - \sqrt{8}}$ can be written in the form $\sqrt{a} + \sqrt{b}$, where a and b are integers.

(5)

(Total 5 marks)

Q4.

Expand and simplify $(\sqrt{7} + 2)(\sqrt{7} - 2)$.

(2)

(Total 2 marks)

Q5.

Write

$$\sqrt{(75)} - \sqrt{(27)}$$

in the form $k\sqrt{x}$, where k and x are integers.

(2)

(Total 2 marks)

Q6.

(a) Expand and simplify $(7 + \sqrt{5})(3 - \sqrt{5})$

(3)

(b) Express $\frac{7 + \sqrt{5}}{3 + \sqrt{5}}$ in the form $a + b\sqrt{5}$, where a and b are integers.

(3)

(Total 6 marks)

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Q7.

Simplify

(a) $(3\sqrt{7})^2$

(1)

(b) $(8 + \sqrt{5})(2 - \sqrt{5})$

(3)

(Total 4 marks)

Q8.

(i) Express

$$(5 - \sqrt{8})(1 + \sqrt{2})$$

in the form $a + b\sqrt{2}$, where a and b are integers.

(3)

(ii) Express

$$\sqrt{80} + \frac{30}{\sqrt{5}}$$

in the form $c\sqrt{5}$, where c is an integer.

(3)

(Total 6 marks)

Q9.

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)

(Total 4 marks)

Q10.

Solve the equation

$$10 + x\sqrt{8} = \frac{6x}{\sqrt{2}}$$

Give your answer in the form $a\sqrt{b}$ where a and b are integers.

(4)

(Total 4 marks)