

**SURDS AND STANDARD FORM**

Question 1

- (a) Rationalise the denominator of $\frac{21}{\sqrt{7}}$

Give your answer in its simplest form.

.....
(2)

- (b) Write $\frac{\sqrt{48}-2}{1+2\sqrt{3}}$ in the form $\frac{a-b\sqrt{3}}{c}$, where a , b and c are integers.

.....
(4)

Question 2

$$4.35 \times 10^{-11} = k \times (6 \times 10^{-19})$$

Work out the value of k .

Give your answer in standard form.

$$k = \dots\dots\dots$$

(3 marks)

Question 3

(a) Rationalise the denominator of $\frac{1}{\sqrt{3}}$

$$\dots\dots\dots$$

(1)

(b) Simplify fully $\sqrt{32} - \sqrt{8}$

$$\dots\dots\dots$$

(2)

Question 4

Write $\frac{3\sqrt{5}}{4-\sqrt{5}} - \frac{2}{\sqrt{5}}$ in the form $\frac{a\sqrt{5}+b}{c}$ where a , b and c are integers.

(4)

Question 5**Do not use a calculator for this question**

Work out the value of $\left(\frac{81}{16}\right)^{\frac{3}{4}}$

.....
(2 marks)

Question 6

Simplify fully $(2x^6y^5)^3$

.....
(2)

Question 7 (Do not use a calculator)

Work out the value of $\frac{\left(1\frac{9}{16}\right)^{\frac{1}{2}} \times \left(1\frac{3}{5}\right)^{-1}}{16^{\frac{1}{2}}}$

You must show all your working.

(4)

Question 8

Show that $\frac{8 + \sqrt{18}}{6 + \sqrt{2}}$ can be written in the form $\frac{a + b\sqrt{2}}{c}$ where a , b and c are integers.

Give your answer in its simplest form.

(4 marks)

Question 9

$$(ax^6)^{\frac{1}{n}} = 4x^2$$

Work out the value of a and the value of n .

$$a = \dots\dots\dots$$

$$n = \dots\dots\dots$$

(2 marks)

Show that $\frac{\sqrt{252} - 2\sqrt{7}}{3\sqrt{7} - 7}$ can be written in the form $a + b\sqrt{7}$ where a and b are integers.

.....(4)

Question 10

(a) Rationalise the denominator of $\frac{21}{\sqrt{7}}$

Give your answer in its simplest form.

.....

(b) Show that $\frac{\sqrt{5}}{3\sqrt{5}-2}$ can be written in the form $\frac{a+b\sqrt{5}}{c}$ where a, b and c are integers. (2)

(3)

Question 11

Given that $(4^2)^{-\frac{1}{2}} = 64^{\frac{1}{4}} \div 4^{x+2}$

find the exact value of x .

-----**(3)**