SCAN ME

crash**MATHS**

INDICES & SURDS WORKSHEET

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1 Express

$$\frac{2y^2}{y\sqrt{4y^3}}$$

in the form ay^k, where a and k are constants to be found.

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Question 1 continued

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2 Show that

$$\frac{1}{\sqrt{2}+\sqrt{5}} = \frac{\sqrt{5}-\sqrt{2}}{k}$$

stating the value of k.

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Question 2 continued

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3 (a) Find the value of $16^{\frac{1}{4}}$.

(b) Find the value of

$$\sqrt{16^{\frac{1}{4}} - 8^{\frac{1}{3}} + 9^{\frac{3}{2}}}$$

(c) Given that

$$f(k) = \sqrt{16^{\frac{1}{4}} + 8^{\frac{1}{3}} - 9^{\frac{3}{2}} + k}$$

Find the range of values of k for which the function is defined.

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Question 3 continued

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4 Show that

$$\frac{p^3+1}{p^2}-\frac{2p-6}{p}\equiv ap^2+\frac{b}{p}+\frac{c}{p^2}$$

where a, b and c are constants to be found.

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Question 4 continued

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5 Express

$$9\sqrt{5} - \frac{7+\sqrt{5}}{1-\sqrt{5}}$$

in the form $x + y\sqrt{5}$, where x and y are constants to be found.

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Question 5 continued

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6 Solve

$$9^{2x+4} = \frac{1}{3^{2y}}$$

given that $y = 6 - 4x$.

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Question 6 continued

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7 Work out the width of a rectangle with area $\sqrt{5}$ and length $1+\sqrt{5}$.

Give your answer in the form $a+b\sqrt{5}$, where a and b are rational constants.

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Question 7 continued

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8 The right angled triangle ABC is defined such that $AB > AC > BC$.

Given that $AC = \sqrt{5} - \sqrt{3}$ and the area of $ABC = 5$ cm, find AB.

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Question 8 continued

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9 Show that

$$\frac{1}{\sqrt{2}+\sqrt{1}}+\frac{1}{\sqrt{3}+\sqrt{2}}+\frac{1}{\sqrt{4}+\sqrt{3}}+\ldots+\frac{1}{10+\sqrt{99}}=9$$

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Question 9 continued

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10 Express

$$\sqrt[3]{\frac{8x^4}{xy^9}} - \left(\frac{16x^2y^6}{x^2+2x+1}\right)^{\frac{1}{2}}$$

as a single fraction in its simplest form.

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Question 10 continued

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11 (a) Given that

$$2^{y+3} = 8^{x+4}$$

Express y in terms of x.

(b) Hence solve the simultaneous equations

$$2^{y+3} = 8^{x+4}$$

$$\frac{1}{\sqrt{x}+\sqrt{y}} = \sqrt{y} - \sqrt{x}$$

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Question 11 continued

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12 Express

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

in the form $a+b\sqrt{2}+c\sqrt{6}$, where a, b and c are rational constants.

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Question 12 continued

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13 Show that there are no values of x and y that satisfy the equations

$$5^{x+3} = 125^{y-3}$$

$$x^2 + y^2 = 4$$

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Question 13 continued

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14 Express

$$\sqrt{\frac{5+4\sqrt{2}}{5-4\sqrt{2}}}$$

in the form $a+b\sqrt{2}$, where a, $b \in Q$.

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Question 14 continued

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15 Given that

$$p = \frac{1}{\sqrt{3}} - \frac{1}{\sqrt{2}}$$

express $\sqrt{6}$ in terms of p.

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Question 15 continued