

爱德思
Pure Mathematics 1
分类真题
2014-2022 册

A Level Clouds 出品

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Chapter 1

Algebraic Expressions

4. Answer this question without the use of a calculator and show all your working.

(i) Show that

$$\frac{4}{2\sqrt{2} - \sqrt{6}} = 2\sqrt{2}(2 + \sqrt{3})$$

(4)

(ii) Show that

$$\sqrt{27} + \sqrt{21} \times \sqrt{7} - \frac{6}{\sqrt{3}} = 8\sqrt{3}$$

(3)

2. Without using your calculator, solve

$$x\sqrt{27} + 21 = \frac{6x}{\sqrt{3}}$$

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

You must show all stages of your working.

(4)

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1. Simplify the following expressions fully.

(a) $(x^6)^{\frac{1}{3}}$

(b) $\sqrt{2}(x^3) \div \sqrt{\frac{32}{x^2}}$

(1)

(2)

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3. Given that

$$y = \frac{1}{27}x^3$$

express each of the following in the form kx^n where k and n are constants.

(a) $y^{\frac{1}{3}}$

(1)

(b) $3y^{-1}$

(1)

(c) $\sqrt{(27y)}$

(1)

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2. (i) Given that $\frac{49}{\sqrt{7}} = 7^a$, find the value of a .

(2)

(ii) Show that $\frac{10}{\sqrt{18} - 4} = 15\sqrt{2} + 20$

You must show all stages of your working.

(3)

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3. Answer this question without a calculator, showing all your working and giving your answers in their simplest form.

(i) Solve the equation

$$4^{2x+1} = 8^{4x}$$

(3)

(ii) (a) Express

$$3\sqrt{18} - \sqrt{32}$$

(2)

in the form $k\sqrt{2}$, where k is an integer.

(b) Hence, or otherwise, solve

$$3\sqrt{18} - \sqrt{32} = \sqrt{n}$$

(2)

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3. Answer this question without the use of a calculator and show your method clearly.

(i) Show that

$$\sqrt{45} - \frac{20}{\sqrt{5}} + \sqrt{6}\sqrt{30} = 5\sqrt{5}$$

(2)

(ii) Show that

$$\frac{17\sqrt{2}}{\sqrt{2} + 6} = 3\sqrt{2} - 1$$

(3)

2. Simplify the following expressions fully.

(a) $\left(\frac{1}{9}x^4\right)^{0.5}$

(b) $\left(\frac{x}{\sqrt{2}}\right)^{-2}$

(c) $x\sqrt{3} \div \sqrt{\frac{48}{x^4}}$

(1)

(1)

(2)

Leave
blank

3. Simplify fully

(a) $\left(3x^{\frac{1}{2}}\right)^4$

(b) $\frac{2y^7 \times (4y)^{-2}}{3y}$

(2)

(2)

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