Level 3 Algebra · Indices

June 2013 - Question 1

Jan 2014 - Question 1

Jan 2015 - Question 1

June 2017 - Question 3

Jan 2018 - Question 8

June 2018 - Question 1

Jan 2019 - Question 5

June 2019 - Question 14

Jan 2020 - Question 7

Jan 2021 - Question 1

Jan 2022 - Question 1

June 2022 - Question 1

Jan 2023 - Question 1

June 2023 - Question 8

Jan 2024 - Question 1

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

1 (a) Simplify $m \times m^5$

.....

(1)

(b) Simplify $n^4 \div n^{\frac{3}{2}}$

.....

(1)

(c) Simplify $(p^{-2})^{-1}$

.....

(1)

(d) $\dfrac{d^2 - d^{\frac{1}{2}}}{d}$ can be written in the form $d^x - d^y$

Work out the value of x and the value of y.

$x =$.....

$y =$.....

(3)

(Total for Question 1 is 6 marks)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

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

.....

(1)

(b) Simplify $y^{-2} \times y^{-3}$

.....

(1)

(c) Simplify $\left(\frac{1}{v^2}\right)^{-1}$

.....

(1)

(d) Simplify $\frac{w^{\frac{1}{2}} \times w^{\frac{3}{2}}}{w}$

.....

(2)

(Total for Question 1 is 5 marks)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

1 (a) Simplify $(p^2)^4$

.....

(1)

(b) Simplify $q^{-\frac{1}{2}} \times q^3$

.....

(1)

(c) Simplify $t^{-3} \div t^{-5}$

.....

(1)

(d) $\dfrac{w - w^{\frac{1}{3}}}{w}$ can be written in the form $a - w^b$

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

$a =$.....

$b =$.....

(3)

(Total for Question 1 is 6 marks)

3 (a) Simplify $(2t^3)^4$

.....

(1)

(b) Simplify $w^2 \times w^{\frac{1}{2}}$

.....

(1)

(c) Simplify $p^{-2} \div p^{-4}$

.....

(1)

$\dfrac{3q^3 - q^{\frac{3}{2}}}{q}$ can be written in the form $q^a(3q^b - 1)$

(d) Work out the value of a and the value of b.

$a =$ .....

$b =$ .....

(3)

(Total for Question 3 is 6 marks)

8 (a) Simplify $\left(\frac{x^5}{x^7}\right)^{-1}$

.....

(1)

(b) Simplify $\left(4y^{\frac{2}{3}}\right)^3$

.....

(2)

$6x^{-2}\left(\frac{1}{2}x^6 - \frac{1}{3}x^2\right)$ can be written in the form $ax^n + b$

(c) Find the value of a, the value of b and the value of n.

$a =$ .....

$b =$ .....

$n =$ .....

(2)

(d) Expand and simplify $(3y + 2)^2 - (3y - 2)^2$

.....

(2)

(Total for Question 8 is 7 marks)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

You must NOT use a calculator.

1 (a) Simplify $(9x^4)^{\frac{1}{2}}$

.....

(1)

(b) Simplify $a^7 \div a^{-3}$

.....

(1)

(c) Simplify $(x^{-2})^{-3}$

.....

(1)

$\dfrac{(2q)^2 - q^{\frac{7}{2}}}{q^2}$ can be written in the form $d - q^f$

(d) Work out the value of d and the value of f.

$d =$ .....

$f =$ .....

(3)

(Total for Question 1 is 6 marks)

5 (a) Simplify $(16p^{-2})^{\frac{1}{4}}$

.....

(2)

(b) Simplify $\dfrac{u^2}{m^{\frac{1}{2}}} \div \dfrac{u^{\frac{1}{2}}}{m^3}$

.....

(2)

(c) Express $\dfrac{x-1}{x+3} - \dfrac{x}{x-3}$ as a single fraction.

Give your answer in its simplest form.

.....

(3)

(Total for Question 5 is 7 marks)

14 (a) Simplify $\sqrt[3]{(8x)^6}$

.....

(2)

$(2y^3)^{-3}$ can be written in the form ay^b

(b) Find the value of a and the value of b

$a =$ .....

$b =$ .....

(2)

(Total for Question 14 is 4 marks)

7 (a) Simplify $(p^{-2})^{-4}$

.....

(1)

(b) Simplify $(16t^2)^{\frac{3}{2}}$

.....

(2)

(c) Simplify fully $\dfrac{x^2 - 9}{(x-3)^2(x+3)^2}$

.....

(2)

(Total for Question 7 is 5 marks)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

You must NOT use a calculator.

1 (a) Expand and simplify $(3x - 1)(2x + 3)$

.....

(2)

(b) Simplify $\left(\frac{1}{7x}\right)^{-2}$

.....

(2)

(c) Write $(4y^2)^{\frac{3}{2}}$ in the form ay^n where a and n are integers.

.....

(2)

(Total for Question 1 is 6 marks)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

You must NOT use a calculator.

1 (a) Expand and simplify $(2c - 3d)(2c + 3d)$

.....

(2)

(b) Simplify $(y^{-\frac{1}{2}})^{-6}$

.....

(1)

(c) Simplify $(4p^2 + 5p^2)^{\frac{3}{2}}$

.....

(2)

(d) Express $\dfrac{x}{x+2} - \dfrac{x^2}{(x+2)^2}$ as a single fraction in its simplest form.

.....

(3)

(Total for Question 1 is 8 marks)

DO NOT WRITE IN THIS AREA

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DO NOT WRITE IN THIS AREA

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

You must NOT use a calculator.

1 (a) Expand and simplify $(y + 3)(2y - 3)$

.....

(2)

(b) Expand and simplify $(2 + 5x)^2$

.....

(2)

(c) Simplify $(8r^{12})^{\frac{1}{3}}$

.....

(2)

(d) Simplify $t^{-2} \times t^{-\frac{3}{4}}$

.....

(1)

(Total for Question 1 is 7 marks)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

You must NOT use a calculator.

1 (a) Simplify $3t \times t^3$

.....

(1)

(b) Simplify $y^{-2} \times y^2$

.....

(2)

(c) Simplify $\left(\frac{1}{x}\right)^{-5}$

.....

(1)

(d) Expand and simplify $(2f - 4)^2$

.....

(2)

(Total for Question 1 is 6 marks)

8 $10x^{-2}\left(\frac{1}{5}x^2 + \frac{1}{2}x^8\right)$ can be written in the form $c + dx^n$

(a) Find the value of c, the value of d and the value of n.

$c =$ .....

$d =$ .....

$n =$ .....

(2)

(b) Simplify $\left(2t^{\frac{2}{3}}\right)^3 \times (125t^6)^{\frac{1}{3}}$

.....

(3)

(Total for Question 8 is 5 marks)

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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

You must NOT use a calculator.

1 (a) Expand and simplify $(x + 2)(3x - 2)$

.....

(2)

(b) Expand and simplify $(2y + 5)^2$

.....

(2)

(c) Simplify $(36t^8)^{\frac{1}{2}}$

.....

(2)

(d) Simplify $r^{-3} \times r^{-\frac{1}{4}}$

.....

(1)

(Total for Question 1 is 7 marks)

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