

Indices

Question Paper 1

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Paper Type	Extended
Topic	Algebra and graphs
Sub-Topic	Indices
Booklet	Question Paper 1

Time Allowed: 66 minutes

Score: /55

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

1 Simplify $(16p^{16})^{\frac{1}{4}}$.

..... [2]

2 Simplify.

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

..... [2]

3 (a) Work out the value of x in each of the following.

(i) $3^x = 243$

$x = \dots\dots\dots$ [1]

(ii) $16^x = 4$

$x = \dots\dots\dots$ [1]

(iii) $8^x = 32$

$x = \dots\dots\dots$ [2]

(iv) $27^x = \frac{1}{9}$

$x = \dots\dots\dots$ [2]

(b) Solve by factorisation.

$$y^2 - 7y - 30 = 0$$

Show your working.

$y = \dots\dots\dots$ or $y = \dots\dots\dots$ [3]

4 Simplify.

(a) $x^3y^4 \times x^5y^3$

..... [2]

(b) $(3p^2m^5)^3$

..... [2]

5 Simplify.

$$6uw^{-3} \times 4uw^6$$

Answer [2]

6 $81^x = 3$

Find the value of x .

Answer $x =$ [1]

7 (a) Find the value of

(i) $\left(\frac{1}{4}\right)^{0.5}$,

Answer(a)(i) [1]

(ii) $(-8)^{\frac{2}{3}}$.

Answer(a)(ii) [1]

(b)

$$\frac{\sqrt{29 - 3 \times 32^{0.4}}}{3}.$$

Answer(b) [1]

8 Simplify.

(a) $12x^{12} \div 3x^3$

Answer(a) [2]

(b) $(256y^{256})^{\frac{1}{8}}$

Answer(b) [2]

9 Find the value of

(a) $(\sqrt{5})^8$,

Answer(a) [1]

(b) $\left(\frac{1}{27}\right)^{-\frac{2}{3}}$.

Answer(b) [1]

10 Simplify.

$$\left(\frac{x^{64}}{16y^{16}}\right)^{\frac{1}{4}}$$

Answer [3]

11 (a) Calculate $2^{0.7}$.

Answer(a) [1]

(b) Find the value of x in each of the following.

(i) $2^x = 128$

Answer(b)(i) $x =$ [1]

(ii) $2^x \times 2^9 = 2^{13}$

Answer(b)(ii) $x =$ [1]

(iii) $2^9 \div 2^x = 4$

Answer(b)(iii) $x =$ [1]

(iv) $2^x = \sqrt[3]{2}$

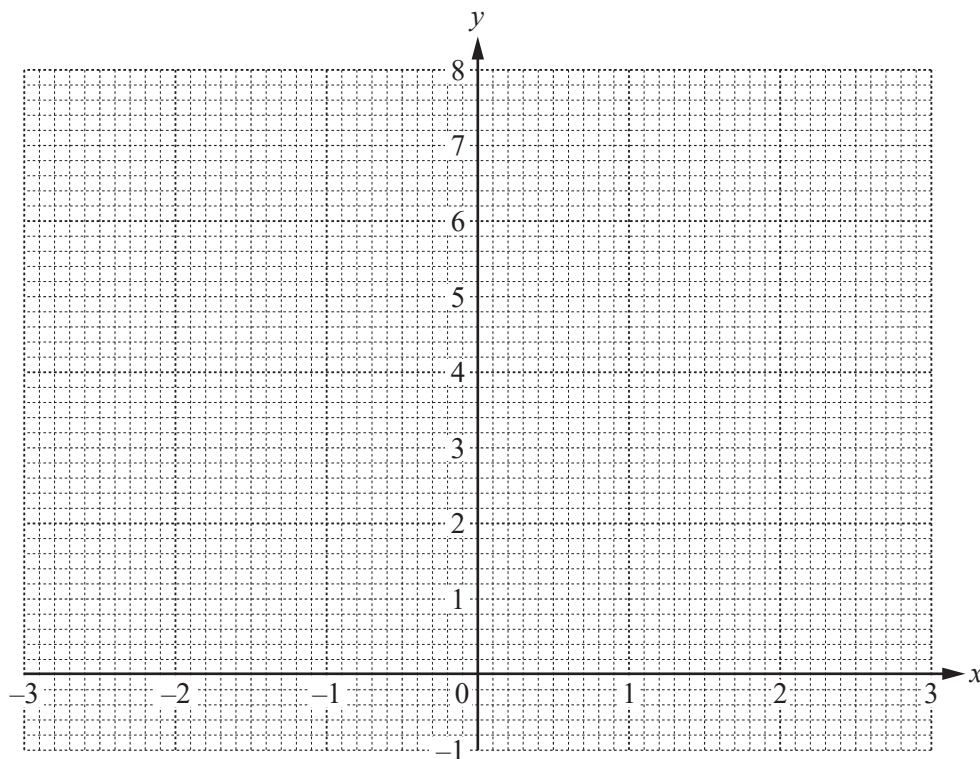
Answer(b)(iv) $x =$ [1]

(c) (i) Complete this table of values for $y = 2^x$.

x	-3	-2	-1	0	1	2	3
y	0.125		0.5		2	4	8

[2]

- (ii) On the grid, draw the graph of $y = 2^x$ for $-3 \leq x \leq 3$.



[4]

- (iii) Use your graph to solve $2^x = 5$.

Answer(c)(iii) $x = \dots\dots\dots$ [1]

- (iv) Find the equation of the line joining the points (1, 2) and (3, 8).

Answer(c)(iv) $\dots\dots\dots$ [3]

- (v) By drawing a suitable line on your graph, solve $2^x - 2 - x = 0$.

Answer(c)(v) $x = \dots\dots\dots$ or $x = \dots\dots\dots$ [2]

12 (a) Simplify

(i) x^0 ,

Answer(a)(i) [1]

(ii) $m^4 \times m^3$,

Answer(a)(ii) [1]

(iii) $(8p^6)^{\frac{1}{3}}$.

Answer(a)(iii) [2]

(b) $243^x = 3^2$

Find the value of x .

Answer(b) $x =$ [2]