

Indices Past Edexcel Exam Questions

1. (Question 1 - C1 May 2018)

(a) (*Surds Question*)

(b) Solve the equation

$$3^{6x-3} = 81.$$

Write your answer as a rational number. [3]

2. (Question 6 - C1 May 2017)

(a) Given $y = 2^x$, show that

$$2^{2x+1} - 17(2^x) + 8 = 0$$

can be written in the form

$$2y^2 - 17y + 8 = 0.$$

[2]

(b) Hence, solve

$$2^{2x+1} - 17(2^x) + 8 = 0.$$

[4]

3. (Question 2 - C1 May 2016)

Express 9^{3x+1} in the form 3^y , giving y in the form $ax + b$, where a and b are constants. [2]

4. (Question 7 - C1 May 2015)

Given that $y = 2^x$,

(a) express 4^x in terms of y . [1]

(b) Hence, or otherwise, solve $8(4^x) - 9(2^x) + 1 = 0$. [4]

5. (Question 2 - C1 May 2014)

- (a) Write down the value of $32^{\frac{1}{5}}$. [1]
 (b) Simplify fully $(32x^5)^{-\frac{2}{5}}$. [3]

6. (Question 3 - C1 May 2013)

- (a) Find the value of $8^{\frac{5}{3}}$. [2]
 (b) Simplify fully $\frac{(2x^{\frac{1}{2}})^3}{4x^2}$. [3]

7. (Question 2 - C1 Jan 2013)

Express 8^{2x+3} in the form 2^y , stating y in terms of x . [2]

8. (Question 2 - C1 May 2012)

- (a) Evaluate $(32)^{\frac{3}{5}}$, giving your answer as an integer. [2]
 (b) Simplify fully $\left(\frac{25x^4}{4}\right)^{-\frac{1}{2}}$. [2]

9. (Question 1 - C1 May 2011)

Find the value of

- (a) $25^{\frac{1}{2}}$ [1]
 (b) $25^{-\frac{3}{2}}$ [2]

10. (Question 1 - C1 Jan 2011)

- (a) Find the value of $16^{-\frac{1}{4}}$. [2]
 (b) Simplify $x\left(2x^{-\frac{1}{4}}\right)^4$. [2]

11. (Question 2 - C1 Jun 2009)
 Given that $32\sqrt{2} = 2^a$, find the value of a . [3]

12. (Question 1 - C1 Jan 2009)
 (a) Write down the value of $125^{\frac{1}{3}}$. [1]
 (b) Find the value of $125^{-\frac{2}{3}}$. [2]

13. (Question 2 - C1 Jan 2008)
 (a) Write down the value of $16^{\frac{1}{4}}$. [1]
 (b) Simplify $(16x^{12})^{\frac{3}{4}}$. [2]

14. (Question 2 - C1 May 2007)
 (a) Find the value of $8^{\frac{4}{3}}$. [2]
 (b) Simplify $\frac{15x^{\frac{4}{3}}}{3x}$. [2]

15. (Question 1 - C1 May 2005)
 (a) Write down the value of $8^{\frac{1}{3}}$. [1]
 (b) Find the value of $8^{-\frac{2}{3}}$. [2]

Solutions

1. (a) (*Surds Question*)
(b) $x = \frac{7}{6}$
2. (a) -
(b) $x = -1, x = 3$
3. $y = 6x + 2, a = 6, b = 2$
4. (a) $4^x = y^2$
(b) $x = -3, x = 0$
5. (a) 2
(b) $\frac{1}{4}x^{-2}$
6. (a) 32
(b) $2x^{-\frac{1}{2}}$
7. $2^{6x+9}, y = 6x + 9$
8. (a) 8
(b) $\frac{2}{5x^2}$
9. (a) 5
(b) $\frac{1}{125}$
10. (a) $\frac{1}{2}$
(b) 16
11. $\frac{11}{2}$
12. (a) 5
(b) $\frac{1}{25}$
13. (a) 2
(b) $8x^9$
14. (a) 16
(b) $5x^{\frac{1}{3}}$
15. (a) 2
(b) $\frac{1}{4}$