

Name:

Level 2 Further Maths
Negative Indices
Fractional Indices



Ensure you have: Pencil or pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/



1. Write as a single power of x

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

$$x^{-3}$$

(1)

(b) $\sqrt[4]{x}$

$$x^{1/4}$$

(1)

(c) $\sqrt{\frac{1}{x^8}}$

~~scribble~~

$$\sqrt{x^{-8}} = x^{-4}$$
$$(x^{-4} \times x^{-4} = x^{-8})$$

$$x^{-4}$$

(1)

(d) $\frac{1}{\sqrt[3]{x^2}}$

$$\frac{1}{x^{2/3}}$$

$$x^{-2/3}$$

(1)

2. Write $\frac{m^3 \times m^2}{(m^7)^2}$ as a single power of m

$$\frac{m^5}{m^{14}}$$

$$m^{-9}$$

(2)

3. Given that $2^m + 2^n = \frac{9}{32}$

Find mn

$$\frac{1}{4} + \frac{1}{32}$$

$$\frac{8}{32} + \frac{1}{32} = \frac{9}{32}$$

$$2^{-2} + 2^{-5}$$

$$-2 \times -5$$

10

(3)

4. $x \quad x^3 \quad x^0 \quad x^{-2}$

Find a value of x such that the expressions above are in order, from smallest to largest.

$x = -0.5$

x	x^3	x^0	x^{-2}
-0.5	-0.125	1	4

-0.5

.....
(3)

5. Write $\sqrt{w^5}$ as a single power of w

$w^{\frac{5}{2}}$

.....
(1)

6. Write 27 in the form 9^n

$9^{\frac{3}{2}}$

.....
(1)

7. Simplify $(16x^8)^{\frac{3}{4}}$

$$8x^6$$

(2)

8. Evaluate $\left(\frac{8}{125}\right)^{-\frac{2}{3}}$

$$\frac{2}{5}$$

$$\frac{4}{25}$$

$$\frac{25}{4}$$

(2)

9. $3^x = 9\sqrt{3}$ and $3^y = \frac{1}{\sqrt{3}}$

Work out 3^{x-y}

$$3^x = 3^2 \times 3^{\frac{1}{2}} \quad 3^y = \frac{1}{3^{\frac{1}{2}}}$$

$$3^x = 3^{\frac{5}{2}} \quad 3^y = 3^{-\frac{1}{2}}$$

$$\begin{aligned} 3^{x-y} &= 3^x \div 3^y \\ &= 3^{\frac{5}{2}} \div 3^{-\frac{1}{2}} \\ &= 3^3 \end{aligned}$$

$$27$$

(5)