Fractional and Negative Indices

ANSWERS

1

Work out 3^{-2}.

3^{-2}

$= \frac{1}{3^2}$

$= \frac{1}{9}$

Answer $\frac{1}{9}$

2

Work out 4^{-3}.

4^{-3}

$= \frac{1}{4^3}$

$= \frac{1}{64}$

Answer $\frac{1}{64}$

3

Work out $36^{\frac{1}{2}}$.

$36^{\frac{1}{2}}$

$= \sqrt{36}$

$= 6$

Answer 6

4

Work out $64^{\frac{1}{3}}$.

$64^{\frac{1}{3}}$

$= \sqrt[3]{64}$

$= 4$

Answer 4

5

Work out $16^{-\frac{1}{2}}$.

$16^{-\frac{1}{2}}$

$= \frac{1}{16^{\frac{1}{2}}}$

$= \frac{1}{\sqrt{16}}$

$= \frac{1}{4}$

Answer $\frac{1}{4}$

6

Work out $27^{-\frac{1}{3}}$.

$27^{-\frac{1}{3}}$

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

$= \frac{1}{\sqrt[3]{27}}$

$= \frac{1}{3}$

Answer $\frac{1}{3}$

7

Write $\frac{1}{81}$ as a power of 9.

$\frac{1}{81} = \frac{1}{9^2}$

$= 9^{-2}$

Answer 9^{-2}

8

Ali says $5^{-2} = -25$. What has Ali done wrong?

Ali's mistake: made it negative.

$5^{-2} = \frac{1}{25}$

Fractional and Negative Indices *further practice*

ANSWERS

9

Work out 9^{-2}.

Answer $\frac{1}{81}$

10

Work out $144^{\frac{1}{2}}$.

Answer 12

11

Work out $1000^{-\frac{1}{3}}$.

Answer $\frac{1}{10}$

12

Write $\frac{1}{32}$ as a power of 2.

Answer 2^{-5}

13

Find the value of n. $81^n = 9$

$n = \frac{1}{2}$

14

Write these in order, smallest first.

4^{-1} $16^{\frac{1}{2}}$ $8^{-\frac{1}{3}}$ 2^{-3}

Order $2^{-3}, 4^{-1}, 8^{-\frac{1}{3}}, 16^{\frac{1}{2}}$

15

The mass of a sample after n hours is 2^{-n} grams. Find its mass after 3 hours.

Answer $\frac{1}{8}$ g

16

Is $49^{-\frac{1}{2}}$ bigger or smaller than 7^{-1}, or the same? Explain.

Answer The same: both are $\frac{1}{7}$