

# Negative and Fractional Exponents

Evaluate the following.

1  $(3)^{-\frac{1}{2}}$

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

3  $(8)^{-\frac{1}{3}}$

4  $(27)^{-\frac{1}{3}}$

5  $(p^3q^2)^{-\frac{4}{5}}$

6  $(4)^{-\frac{3}{2}}$

7  $3mn^{\frac{1}{2}} \cdot 4m^{-\frac{4}{3}}n^{\frac{1}{2}}$

8  $(p^{-\frac{5}{6}})^{-\frac{3}{4}}$

9  $1000000^{-\frac{3}{6}}$

10  $\left(\frac{a^2 \cdot ab^{\frac{1}{4}}}{a^{\frac{3}{2}}}\right)^{-\frac{3}{2}}$

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## Answers

$$\begin{aligned} \text{[1]} \quad (3)^{-\frac{1}{2}} \\ = \frac{1}{3^{\frac{1}{2}}} = 0.57 \end{aligned}$$

$$\begin{aligned} \text{[2]} \quad (8)^{-\frac{2}{3}} \\ = \frac{1}{4} = 0.25 \end{aligned}$$

$$\begin{aligned} \text{[3]} \quad (8)^{-\frac{1}{3}} \\ = \frac{1}{2} = 0.5 \end{aligned}$$

$$\begin{aligned} \text{[4]} \quad (27)^{-\frac{1}{3}} \\ = \frac{1}{3} = 0.33 \end{aligned}$$

$$\begin{aligned} \text{[5]} \quad (p^3q^2)^{-\frac{4}{5}} \\ = p^{-\frac{12}{5}} \cdot q^{-\frac{8}{5}} \end{aligned}$$

$$\begin{aligned} \text{[6]} \quad (4)^{-\frac{3}{2}} \\ = \frac{1}{2^3} = 0.125 \end{aligned}$$

$$\begin{aligned} \text{[7]} \quad 3mn^{\frac{1}{2}} \cdot 4m^{-\frac{4}{3}}n^{\frac{1}{2}} \\ = 12m^{-\frac{1}{3}}n \end{aligned}$$

$$\begin{aligned} \text{[8]} \quad \left(p^{-\frac{5}{6}}\right)^{-\frac{3}{4}} \\ = p^{\frac{5}{8}} \end{aligned}$$

$$\begin{aligned} \text{[9]} \quad 1000000^{-\frac{3}{6}} \\ = \frac{1}{1000000^{\frac{1}{2}}} = 0.001 \end{aligned}$$

$$\begin{aligned} \text{[10]} \quad \left(\frac{a^2 \cdot ab^{\frac{1}{4}}}{a^{\frac{3}{2}}}\right)^{-\frac{3}{2}} \\ = a^{-\frac{9}{4}} b^{-\frac{3}{8}} \end{aligned}$$