Exponents

Laws of exponents

$a^x \times a^y = a^{x+y}$

$\frac{a^x}{a^y} = a^{x-y}$

$(a^x)^y$

$(ab)^x$

$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$

$a^0 = 1$, a is all real numbers

$0^0 = 0$

$a^{-x} = \frac{1}{a^x}$

$\frac{1}{a^{-x}} = a^x$

$\sqrt{a} = a^{\frac{1}{2}}$

$\sqrt[3]{a} = a^{\frac{1}{3}}$

$\sqrt[n]{a} = a^{\frac{1}{n}}$

$\mathbf{a^x \times a^y = a^{x+y}}$

$\mathbf{\frac{a^x}{a^y} = a^{x-y}}$

1. Simplify $3^2 \times 3^4$ using the exponent laws.

2. Simplify $k^1 \times k^9$ using the exponent laws.

3. Simplify $x^3 \times 3^2$ using the exponent laws.

4. Simplify $\frac{a^7}{a^2}$ using the exponent laws.

5. Simplify $\frac{6^5}{6^4}$ using the exponent laws.

6. Simplify $\frac{k^{12}}{k^{-2}}$ using the exponent laws.

$(\mathbf{a^x})^{\mathbf{y}}$

$(\mathbf{ab})^{\mathbf{x}}$

$\left(\frac{\mathbf{a}}{\mathbf{b}}\right)^{\mathbf{n}} = \frac{\mathbf{a^n}}{\mathbf{b^n}}$

$\mathbf{a^0}$ = 1, a is all real numbers

$\mathbf{0^0}$ = 0

1. Write $(5^2)^3$ without brackets.

2. Write $(k^3)^5$ without brackets.

3. Write $\left(\frac{2}{3}\right)^3$ without brackets.

4. Write $\left(\frac{x}{7}\right)^6$ without brackets.

5. Write $\left(\frac{3}{32a}\right)^0$ without brackets.

6. Write $(4k)^9$ without brackets.

7. Write $(3a)^6$ without brackets.

8. Write $(3k^3 \times 8)^7$ without brackets.

$$\mathbf{a^{-x} = \frac{1}{a^x}}$$

$$\mathbf{\frac{1}{a^{-x}} = a^x}$$

1. Write 3^{-3} without negative exponents.

2. Write $(5^3)^{-4}$ without negative exponents.

3. Write $(27)^{-\frac{2}{3}}$ without negative exponents.

4. Write $\frac{1}{9^{-\frac{3}{2}}}$ without negative exponents.

5. Write $\frac{1}{8^{-\frac{4}{3}}}$ without negative exponents.

6. Write $\frac{1}{4^{-\frac{3}{2}}}$ without negative exponents.