

Exponents

Laws of exponents

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

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

$$(a^x)^y$$

$$(ab)^x$$

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

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

$$0^0 = 0$$

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

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

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

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

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

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

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

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

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

3. Simplify $x^3 \times x^2$ 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.

$$(a^x)^y$$

$$(ab)^x$$

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

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

$$0^0 = 0$$

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.

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

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.
