Equations with Unknown Indices

Equations with Unknown Indices

(a) $2^x = 64$ (b) $3^x = 729$

(c) $5^x = \frac{1}{125}$ (d) $\frac{1}{16} = 4^x$

Solve each equation to find x:

Solve each equation to find x:

(a)
$$2^x = 64$$

(a)
$$2^x = 64$$
 (b) $3^x = 729$

(c)
$$5^x = \frac{1}{125}$$
 (d) $\frac{1}{16} = 4^x$

(d)
$$\frac{1}{16} = 4^{x}$$

(e)
$$(-2)^x = -32$$

(f)
$$\left(\frac{1}{10}\right)^{x} = \frac{1}{10000}$$

Solve each equation to find x:

(a)
$$9^x = 3$$

(b)
$$2 = 16^x$$

(c)
$$(-8)^x = -2$$
 (d) $4^x = \frac{1}{2}$

(d)
$$4^x = \frac{1}{2}$$

(e)
$$\frac{1}{3} = 27^x$$

$$(f) \qquad \left(\frac{2}{3}\right)^{x} = \frac{3}{2}$$

Solve each equation to find x:

(a)
$$9^x = 3$$

(b)
$$2 = 16^x$$

(c)
$$(-8)^x = -2$$
 (d) $4^x = \frac{1}{2}$

(e) $(-2)^x = -32$

(f) $\left(\frac{1}{10}\right)^{x} = \frac{1}{10000}$

(d)
$$4^x = \frac{1}{2}$$

(e)
$$\frac{1}{3} = 27^x$$

$$(f) \qquad \left(\frac{2}{3}\right)^x = \frac{3}{2}$$

Solve each equation to find x:

(a)
$$4^{2x} = 16$$

(a)
$$4^{2x} = 16$$
 (b) $2^{x+1} = 16$

(c)
$$7^{-x} = \frac{1}{49}$$
 (d) $\frac{1}{512} = 2^{3x}$

(d)
$$\frac{1}{512} = 2^{3x}$$

(e)
$$5^{1-x} = 625$$
 (f) $\frac{1}{4} = 16^{-1/x}$

(f)
$$\frac{1}{4} = 16^{-1/x}$$

Solve each equation to find x:

(a)
$$4^{2x} = 16$$

(a)
$$4^{2x} = 16$$
 (b) $2^{x+1} = 16$

(c)
$$7^{-x} = \frac{1}{49}$$
 (d) $\frac{1}{512} = 2^{3x}$

(d)
$$\frac{1}{512} = 2^{3x}$$

(e)
$$5^{1-x} = 625$$

(f)
$$\frac{1}{4} = 16^{-1/x}$$

Find the fractional value of x:

(a)
$$9^x = 27$$

(b)
$$4 = 8^x$$

(c)
$$16^x = \frac{1}{64}$$

(c)
$$16^x = \frac{1}{64}$$
 (d) $\left(\frac{4}{9}\right)^x = \frac{8}{27}$

(e)
$$\frac{1}{343} = 49^x$$
 (f) $27^x = \frac{1}{81}$

(f)
$$27^x = \frac{1}{81}$$

Find the fractional value of x:

(a)
$$9^x = 27$$

(a)
$$9^x = 27$$
 (b) $4 = 8^x$

(c)
$$16^x = \frac{1}{64}$$

(c)
$$16^x = \frac{1}{64}$$
 (d) $\left(\frac{4}{9}\right)^x = \frac{8}{27}$

(e)
$$\frac{1}{242} = 49^x$$

(e)
$$\frac{1}{343} = 49^x$$
 (f) $27^x = \frac{1}{81}$

Solve:

(a)
$$2^{3/2} \times 2^x = 2^2$$
 (b) $\frac{5^3}{5^2/3} = 5^x$

(b)
$$\frac{5^3}{5^2/3} = 5^3$$

(c)
$$\left(\frac{1}{\sqrt{10}}\right)^3 \times 10^{-2} = 10^x$$

Solve:

(a)
$$2^{3/2} \times 2^x = 2^2$$
 (b) $\frac{5^3}{5^2/2} = 5^x$

(b)
$$\frac{5^3}{5^2/3} = 5$$

(c)
$$\left(\frac{1}{\sqrt{10}}\right)^3 \times 10^{-2} = 10^x$$