Solving Exponential Equations

Note Title 10/1/2012

I can solve an exponential equation.

Ex1: $5^{\sqrt{3}} \div 5^{\sqrt{2}}$

$5^{\sqrt{3}-\sqrt{2}}$

b) $\left(6^{\sqrt{5}}\right)^{\sqrt{6}}$

$6^{\sqrt{30}}$

c) $64^{\pi} \cdot \square^{\pi}$

$(2^6)^{\pi} \cdot 2^{\pi}$

$2^{6\pi} \cdot 2^{\pi}$

$2^{6\pi+\pi}$

$2^{7\pi}$

Solve!

Ex 2

a) $2^x = \frac{1}{128}$ "like bases"

$2^x = 2^{-7}$ set exponents equal; solve

$x = -7$

b) $3^{5x} = (\quad)^{2x-1}$

$3^{5x} = (3^2)^{2x-1}$

$3^{5x} = 3^{4x-2}$

$5x = 4x - 2$

$-4x \quad -4x$

$x = -2$

c) $4^{9n-2} = 256$

$4^{9n-2} = 4^4$

$9n - 2 = 4$

$+2 \quad +2$

$\frac{9n}{9} = \frac{6}{9}$

$n = \frac{2}{3}$

256

4 64

4 16

4 4

You try...

$3^{2n+1} = 81$

$3^{2n+1} = 3^4$

$2n+1 = 4$

$-1 \quad -1$

$\frac{2n}{2} = \frac{3}{2}$

$n = \frac{3}{2}$

81

9 9

3 3 3 3

* $4^{2x} = 8^{x-1}$

$(2^2)^{2x} = (2^3)^{x-1}$

$2^{4x} = 2^{3x-3}$

$4x = 3x - 3$

$-3x \quad -3x$

$x = -3$

Ex3: $5^{3-2k} > \frac{1}{625}$

Ex

$e^{x} = 5$

You try . . .

Ex 5

$3^x = 7$

$5^{(x-2)} = 71$