5.3 Exponential Equations

Thursday, September 26, 2013
10:27 AM

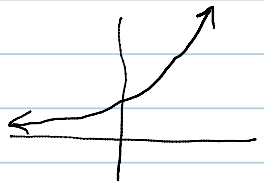
Solve $4^n = 8^4$

$(2^2)^n = (2^3)^4$

$2^{2n} = 2^{12}$

$\therefore 2n = 12$

$\boxed{n = 6}$



$(-2)^2 = (2)^2$

Solve $3^{4x-1} = 27^{2x}$

$3^{4x-1} = (3^3)^{2x}$

$3^{4x-1} = 3^{6x}$

$\therefore 4x - 1 = 6x$

$-1 = 2x$

$x = \frac{-1}{2}$

Check: $3^{4(-\frac{1}{2})-1}$ | $27^{2(-\frac{1}{2})}$

$= 3^{-2-1}$ | $= 27^{-1}$

$= 3^{-3}$ | $= \frac{1}{27}$

$= \frac{1}{27}$

LHS = RHS

Solve $5^{x+1} + 5^x = 750$

$5^x \cdot 5^1 + 5^x = 750$

$5^x(5+1) = 750$

$5^x \cdot 6 = 750$

$\frac{6}{6} \quad \frac{750}{6}$

$5^x = 125$

$5^x = 5^3$

$\therefore \boxed{x = 3}$

Solve $\left(\frac{1}{16}\right)^x = 8^{5-x}$

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

$2^{-4x} = 2^{15-3x}$

$\therefore -4x = 15 - 3x$

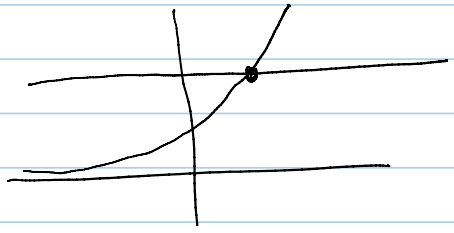
$x = -15$

Solve $5 = 2^x$

$y_1 = 5$

$y_2 = 2 \wedge x$

[2nd] [trace]

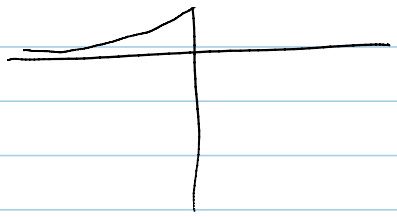


$y_2 = 2^{\wedge} x$

2nd trace

-intersect

enter x3



$x = 2.32$