6-2 Solving Exponential and Logarithmic equations

Objectives:

6-2a: I can solve exponential and logarithmic equations graphically.

6-2b: I can solve exponential and logarithmic equations algebraically.

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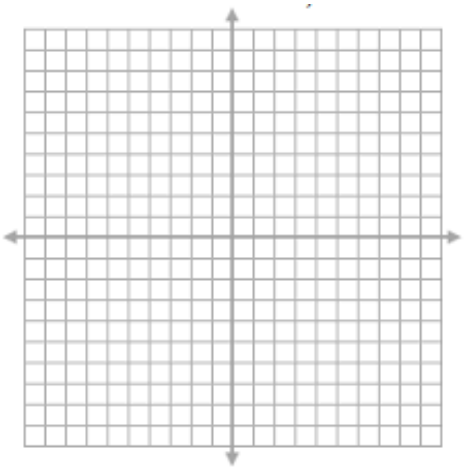
Solving Graphically

Graph each side of the equation as their own graphs and find the intersection.

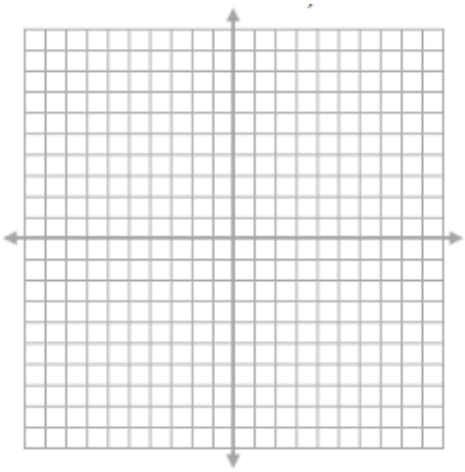
$275e^{0.06x} = 1000$

$y_1 =$ $y_2 =$



$10^{2x} = 1500$

$y_1 =$ $y_2 =$



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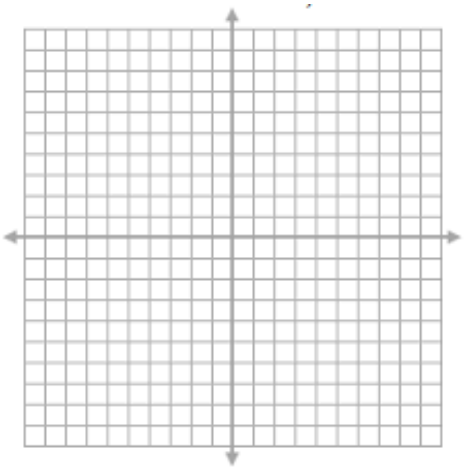
Now you try...solve the exponential & logarithmic equations graphically.

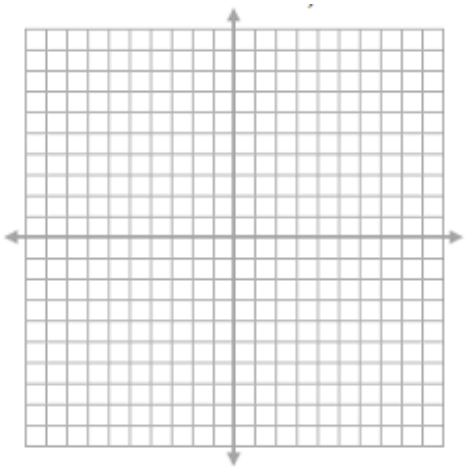
$20^{2r} = 56$

$y_1 =$ $y_2 =$



$e^{.23x} = 1.99$

$y_1 =$ $y_2 =$



Logarithmic equations are the inverse of Exponential equations

Exponential Equation	Logarithmic Equation
$b^x = a$	$\log_b a = x$

$$b > 0, b \neq 1$$

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Inverses

Addition/Subtraction	Natural Log/e^	Common Log/10^	Log base b/b^
$x-5=10$	$e^x=5$	$10^x=100$	$2^x=16$
$x+7=21$	$\ln x=7$	$\log x=3$	$\log_3 x=4$

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Solve the following equations

$10 = 5e^{4x}$

$5^{x-1} - 4 = 7$

$\log_3(2x-4) = 4$

$6^{3x} = 12$

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Solve the following

$$\ln(x+12) = 3\ln 2$$

$$\log(4x) = 2$$

$$4\ln(x+7) - 5 = 1$$

Jan 3-3:04 PM

Day 2

Solve the following

$\log_6 x + \log_6 (x+1) = 2$

$\log_5 (x^2+1) - \log_5 10 = 1$

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Solve the following

$2^{x+1} \cdot 2^{x+3} = 1$

$3^{x} \cdot 3^{x-4} = 27$

Solve the following

$$\frac{2^{2x+5}}{2^{x+7}} + 4 = 20$$

$$\log_3 \sqrt{2x+6} = \log_3 x + \log_3 2$$