3 Warm Up Questions

To do in your notes

① Completly factor $100n^2 - 200n + 100$

$100(\quad)$

② Solve the absolute value equation $3|2x+1| - 4 = 56$

① Completly factor

$100n^2 - 200n + 100$

$100(n^2 - 2n + 1)$

$100(n-1)(n-1)$

	n	-1
n	n^2	$-n$
-1	$-n$	1

n^2

$-2n$

$n \quad n$

$-n \cdot -n$

$3|2x+1|-4 = 56$

$+4 \quad +4$

$\frac{3|2x+1|}{3} = \frac{60}{3}$

$|2x+1| = 20$

$2x+1 = 20$ $\quad -1 \quad -1$

$2x = 19$

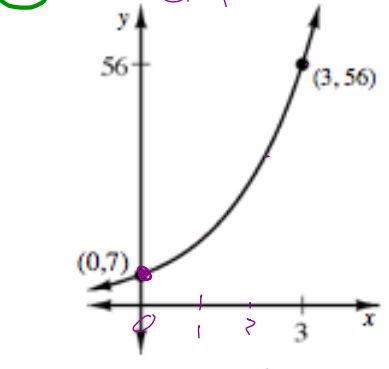
$x = \frac{19}{2}$

$2x+1 = -20$ $\quad -1 \quad -1$

$2x = -21$

$x = -\frac{21}{2}$

(3) exponential



$y = ab^x$

$y = 7(2)^x$

another perspective

$(0, \frac{7}{1}, \frac{}{2}, \frac{56}{3}, -)$

another perspective

0	7
1	b
2	b
3	56 (b)
4	

$7 \cdot b \cdot b \cdot b = 56$

$\frac{7b^3}{7} = \frac{56}{7}$

$b^3 = 8$

$\sqrt[3]{b^3} \quad \sqrt[3]{8}$

$b = 2$

B-26

x = # weeks

Morgan $y = 615 + 25x$

Kendall $y = 975 - 15x$

$615 + 25x = 975 - 15x$

Test 1 Re-take Optioins

The Window is closing on opportunties to come in to get help and the re-take it.

Today

Thur

Fri Test 2

Question on HW ?

B+ 26

Morgan's savings $M = 615 + 25x$ (Saving!!!)

Kendal's $K = 975 - 15x$ (Spending!!!)

when will they be the same?

equal values

$615 + 25x = 975 - 15x$

$+15x \quad\quad -15x$

$615 + 40x = 975$

$-615 \quad\quad -615$

$40x = 360$

$x = 9$

They will both have the same in 9 weeks

B-35 (a)

x	y
-1	3
0	← 15
1	75
2	← 375
3	← 1875

$3 \cdot r \cdot r = 75$

$3r^2 = 75$

$r^2 = 25$

$\sqrt{\quad} \quad \sqrt{\quad}$

$r = 5$ multiplier

$y = 15(5)^x$

b)

x	y	
0		← 151
1		← 120.8
2	96.94	
3	77.312	
4		← 61.85

$\frac{77.312}{96.94} = 0.8$ multiplier

$y = 151(0.8)^x$

B-64

(a) $8a + a - 3 = 6a - 2a - 3$

$9a - 3 = 4a - 3$

$-4a \quad\quad -4a$

$5a - 3 = -3$

$+3 \quad\quad +3$

$5a = 0$

divide by 5

$a = 0$

(b) $8(3m - 2) - 7m = 0$

$24m - 16 - 7m = 0$

$17m - 16 = 0$

$17m = 16$

$m = \frac{16}{17}$

(a) $\frac{x}{2} + 1 = 6$
$-1 \quad -1$

$\frac{x}{2} = 5$

multiply by 2

$x = 10$

(d) $|x-3| + 5 = 11$
$-5 \quad -5$

$|x-3| = 6$

$x - 3 = 6$ or $x - 3 = -6$
$+3 \quad +3 \quad +3 \quad +3$

$x = 9$ or $x = -3$

B-75

$2x - 3y = 12$
$y + x = -9$

$y = -9 - x$

If I use substitution

$2x - 3(-9-x) = 12$

$2x + 27 + 3x = 12$

$5x + 27 = 12$
$-27 \quad -27$

$5x = -15$

$x = -3$

$y + -3 = -9$
$+3 \quad +3$

$y = -6$

Solution $(-3, -6)$

If I use elimination

$2x - 3y = 12$

$x + y = -9 \rightarrow 3$

$2x - 3y = 12$

$+ \quad 3x + 3y = -27$

$5x = -15$

$x = -3$

↓

same answer as above

P. 112

a) $3^{-2} = \frac{1}{3^2} = \frac{1}{9}$

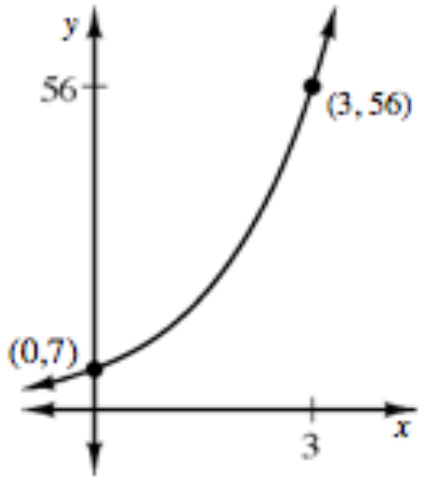
b) $m^{-4} = \frac{1}{m^4}$

c) $\left(\frac{1}{2}\right)^{-3} = \left(\frac{2}{1}\right)^{3} = 2^3 = 8$

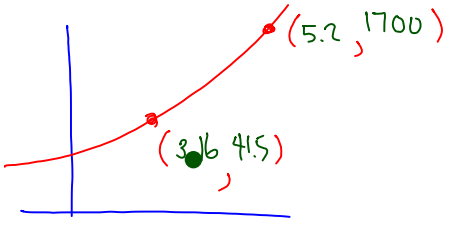
d) $\left(\frac{3}{5x}\right)^{-1} = \left(\frac{5x}{3}\right)^{1} = \frac{5x}{3}$

Aim

Create an exponential model using double substitution



What if values not so friendly?



to help us, we'll re-visit a problem from our RECENT past (the Warm Up)

slope 3 **point (5, 19)**

$y = mx + b$

slope 3 **point (5, 19)**

input output

$y = mx + b$

because we new it was a line

We made substitutions

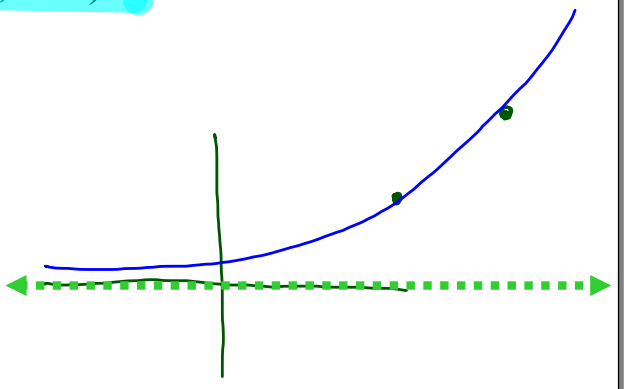
title

Create Exponential functions using double Substitution

↳ method works on many types of functions

Example 1

find the equation of an exponential function with an asymptote at y = 0 that passes through the points (2, 16) and (6, 256).



$(2, 16)$ $(6, 256)$

x y x y

$y = ab^x$

$16 = ab^2$

$a = \frac{16}{b^2}$

$y = ab^x$

$256 = ab^6$ ← System

$256 = \left(\frac{16}{b^2}\right) b^6$

$16b^4 = 256$

$\frac{16b^4}{16} = \frac{256}{16}$

$b^4 = 16$

$\sqrt[4]{b^4} = \sqrt[4]{16}$

$b = 2$

$$a = \frac{16}{(b)^2}$$

$$a = \frac{16}{(2)^2}$$

$$= 4$$

$$y = 4(2)^x$$

$$16 = ab^2 \qquad 256 = ab^6$$

Example 2 $(4, 11)$ $(7, 1375)$

$y = .0176(5)^x$

$y = \frac{11}{625}(5)^x$

$\frac{11\,b^7}{b^4 \cdot 1}$ b^3 , $\frac{b^7}{b^4}$

Assignment

Worksheet "Systems...." which requires your textbook on two of the problems.