

U6D4- Exponential Equations Part 2 Handout

Tuesday, December 5, 2017

10:58 AM



Unit 6
Lesson 4-T...

Unit 6 Lesson 4 Exponential Equations Part 2

Method #2 : Systematic Trial

Used when you cannot find a common base:

Example1:

a. solve $3^x = 7$ to 1 decimal place

note: $3^1 = 3$
 $3^2 = 9$ $\leftarrow x$ is between 1 and 2.

Try $3^{1.6} = 5.79...$

$3^{1.8} = 7.22...$ $\therefore x \doteq 1.8$

$3^{1.7} = 6.47...$

b. solve $2^{x+1} = 5$ to 1 decimal place

$2^2 = 4$

$2^3 = 8$

Try $2^{2.2} = 4.59...$

$2^{2.3} = 4.92...$

$2^{2.4} = 5.27$

\leftarrow exponent
2.3 is best

So $x+1 \doteq 2.3$

$x \doteq 1.3$

Example 2:

Justin has \$1000 in savings to invest, and he wants \$1200 to use to buy a new laptop in a few years. If he earns 4.3% per year, compounded annually, the equation that describes Justin's investment is $1200 = 1000(1.043)^n$, where n is the number of years for which the money is invested. Solve the equation for n to determine how long it will take before he can buy the laptop. Round your answer to one decimal place.

$$1000(1.043)^n = 1200$$

n	A
5	1234...
4	1183...
4.7	1218...
4.4	1203.51
4.3	1198...

\therefore it will take
Justin 4.4 years to
save for his laptop.

Assumption: if money is not left invested an exact number of years, the interest is paid for a fractional number of years.

Unit 6 Lesson 4

Exponential Equations Part 2Method #3 : Graphing

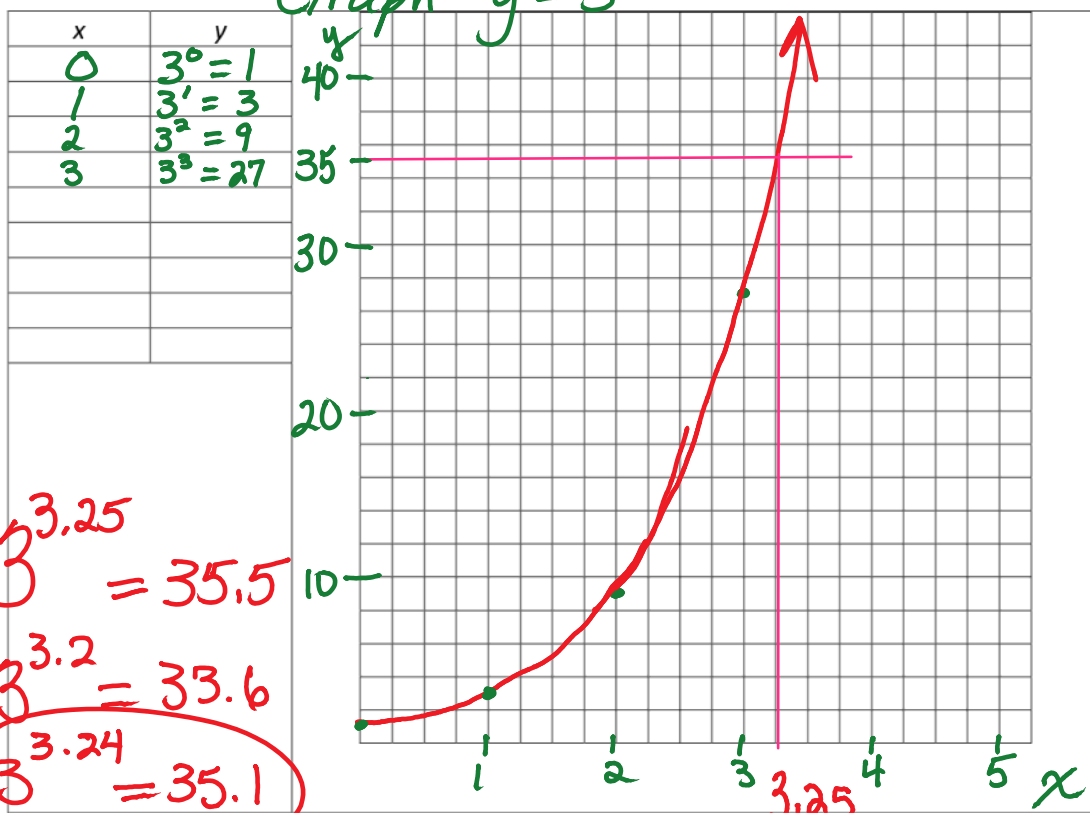
This is the least accurate of the three methods. It can be used when you cannot calculate rational or decimal exponents.

Method – create a table of values, graph and estimate the solution.

Example:

a. $3^x = 35$

Graph $y = 3^x$



HW: Pg 373 – 374 #3, 4, 8, 9, 10

$\therefore x = 3.24$

↑ get an approximate answer from graph.