

**DO NOW!: SOLVE**

(a)  $2^x = 4$

(b)  $3^x = \frac{1}{3}$

(c)  $\left(\frac{1}{4}\right)^x = 64$

(d)  $\left(\frac{1}{5}\right)^x = \frac{1}{625}$

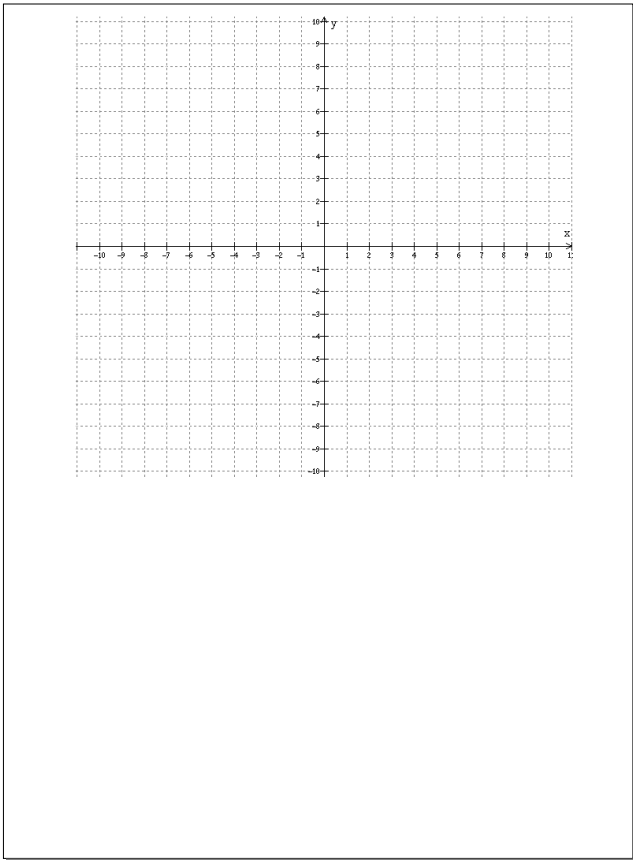
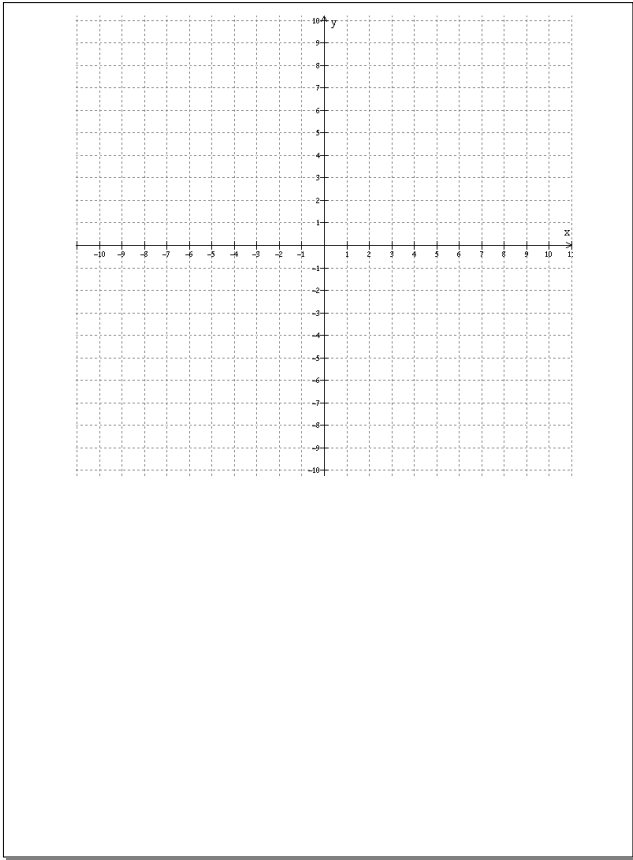
(e)  $6^x = \frac{1}{36}$

(f)  $7^x = -7$

**homework  
questions?**

what is the **hardest part** about graphing?

what is the **easiest part** about graphing?



# how to solve exponential equations

## ON YOUR OWN: SOLVE

(a)  $2^x = 4$

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$$2^x = \cancel{2} 2^2$$

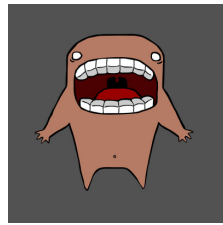
$$3^x = \cancel{3} 3^{-1}$$

$$4^{-x} (\cancel{4})^x = \cancel{4} 4^3$$

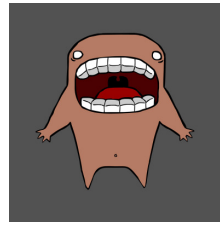
**try it out!**

$$7^x = 4$$

how could such a simple equation foil us?



$$7^x = 4$$



<http://www.danielmason.com/site/wp-content/uploads/2007/12/scream.jpg>

how could such a simple equation foil us?

$$7^x = 4$$

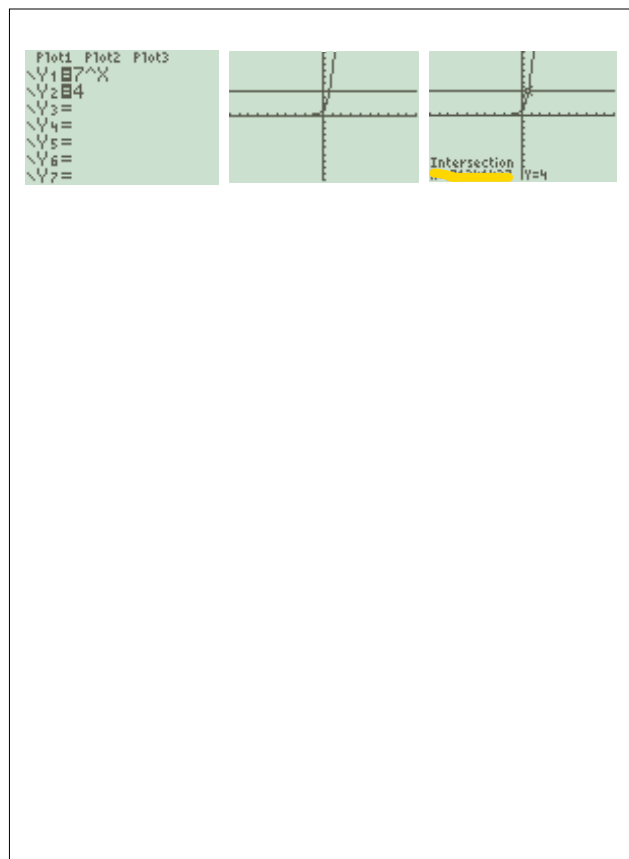


any bright ideas on how to solve this?

<http://www.lighting-masters.com/images/brightideas.jpg>

GUESS & CHECK & REFINE

GRAPHING



**BONUS CONCEPT QUESTION:**

why does  $7^x = -7$  not have a solution?

**let's do these together!**

$$5^{2x} + 5 = 130$$

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

$$5^{2x} + 5 = 130$$

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

***tips***

- (1) get  $x$  on one side of the equation
- (2) see if the LHS & RHS can be written with similar bases
- (3) if all else fails, use your calculator

**you try! check yo'self!**

$$5(2^{x+1}) - 2 = -\frac{3}{4}$$

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

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

Homework:  
Section 4.5#1-6,8-10,14,21  
(do 1-4,8-10 without a calculator)