

## Warm-up

Work on your Warm-up



$$\begin{array}{r} 36 \\ 6 \times 6 \\ \hline 12 \end{array}$$

**Which of the following is a perfect square trinomial expression?**

$$(x+6)^2$$

a)  $x^2 + 12x + 36$

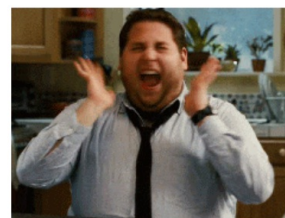
b)  $x^3 + 16x + 17$

c)  $x^2 + 16x + 17$

d)  $x^2 + 5x - 3$

## Agenda:

- 1) Solving Quadratic Equations with calculators / Quadratic Regression
- 2) Vertex Discovery Lab
- 3) Exit Ticket



$$6x = 4x^2 - 1$$
$$-6x - 6x$$

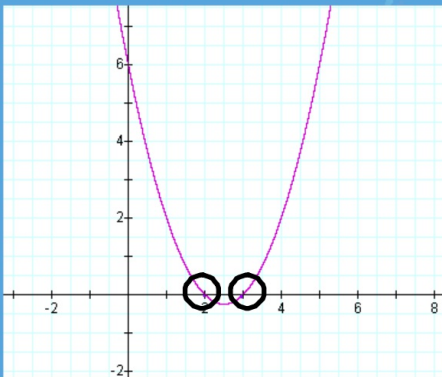
$$4x^2 - 6x - 1$$

$$\begin{array}{r} -4 \\ -6 \end{array}$$



Remember you are trying to find **SOLUTIONS**  
to a Quadratic

The solutions are the x intercepts of  
a Quadratic Graph!!!

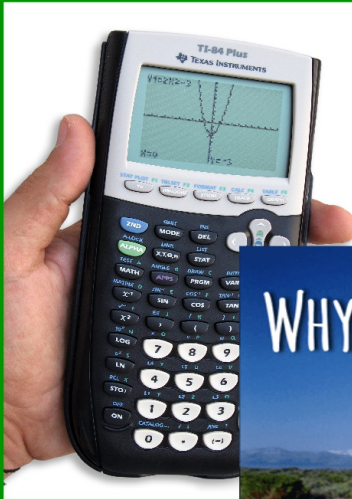


**These all mean the  
same thing!**

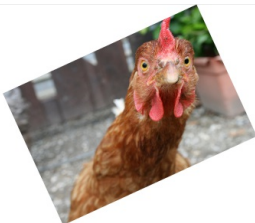
**Solutions**  
**X intercepts**  
**Roots**  
**Zeros**



## SOLVING BY GRAPHING!



## WHY DID THE CHICKEN CROSS THE ROAD?



## SOLVING EGRAPHII!



OLD

PROBLEM:  $6x = 4x^2 - 1$

$$4x^2 - 6x - 1 = 0$$
$$x = -0.151, 1.651$$

$$\ast 2x^2 - 4 = 0$$

$$x = -1.414, 1.414$$

$$2x^2 + 4 = 0$$

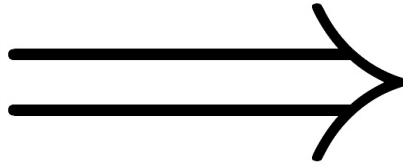
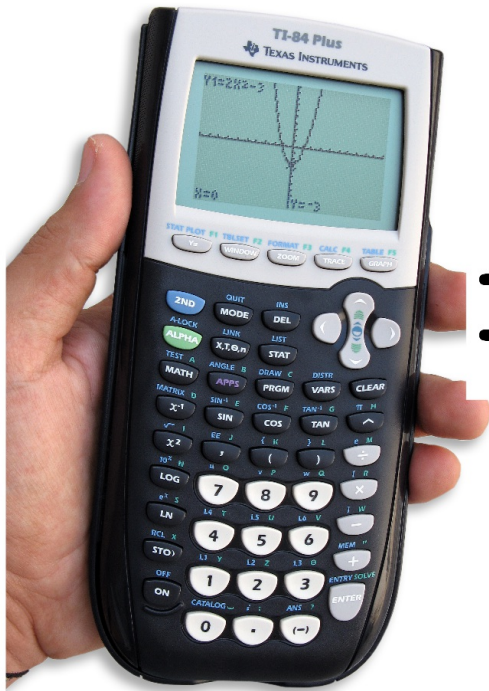
### List of procedures!

- Set the equation equal to zero (Beyonce!)
- Graph the function
- Is it crossing? (think of the chicken)



- 2nd "trace" -> zero
- Capture the points that crosses the x-axis with left bound and right bound.
- You found your solutions!

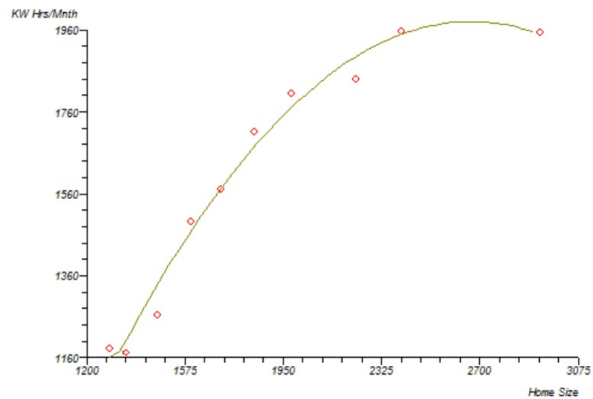
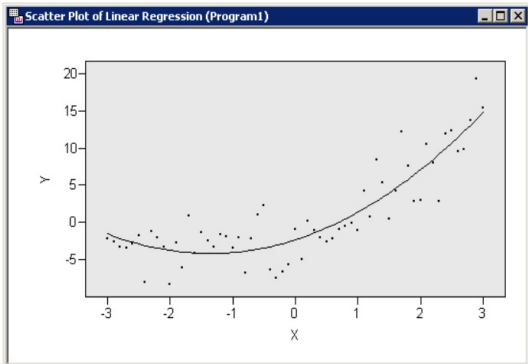
# SOLVING EGRAPHII!



## Quadratic Regression



- 1. We can create a quadratic equation / a graph from a given set of data.**
- 2. This will allow us to predict the future!!**



## Quadratic Regression



*So much data...what do we do with it?*



### Example 1

The table of values below represents the height in feet of a rocket as a function of time in seconds. Use regression to write a quadratic equation representing the table of values, and identify when the rocket will return to the ground both algebraically and graphically.

$x$	$h(x)$
1	199
3	441
10	280

$$-16x^2 + 185x + 30$$

after 11.7 s.  
the rocket hits  
the ground.

### Example 2

The height of a ball that has been thrown is tracked at different times as it flies through the air. Three points,  $(1, 58)$ ,  $(3, 66)$  and  $(4, 22)$ , are recorded. If the height of the ball is recorded in feet and the time is recorded in seconds, determine the height of the ball after 2 seconds from when it is thrown.

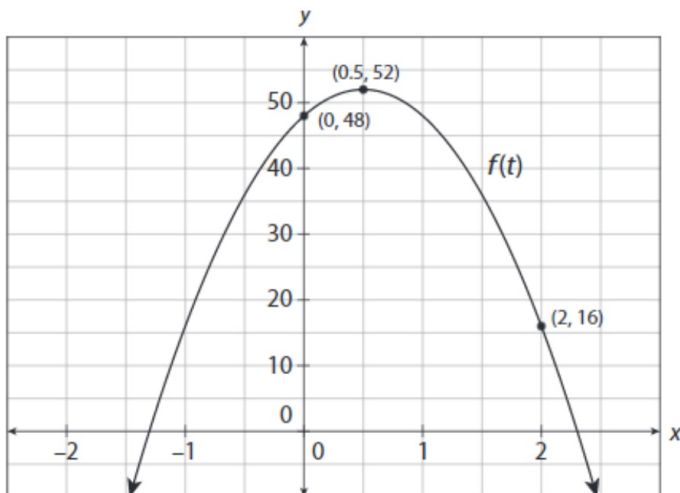
x	y
1	58
3	66
4	22

$$-16x^2 + 68x + 6$$

after two seconds  
my height is 78ft.

### Example 3

You and a friend are vacationing in Acapulco, Mexico, and decide to jump off a cliff and into the ocean. Your height as a function of time can be represented by the following graph of  $f(t)$ , and your friend's height can be represented in the table of values,  $g(t)$ . Determine the approximate difference in time that it takes for both of you to reach the surface of the water.



t	g(t)
0	48
1	53
2	26

Independent work!

**Vertex Form Discovery Lab:**

**-you will need your computers to help with vocab at the beginning.**

**Expectations:**

**Individual work.**

**Music volume > Talking volume.**

**30 minutes.**



## Closure:

- Your homework question is due tomorrow. Also, your homework worksheet is due tomorrow.
- *Have a GREAT rest of the day!*



# Exit Ticket



For problem 1, calculate the quadratic regression equation of the ordered pairs.

1. (2, 37), (5, 10), and (9, 2)

Solve the quadratic equation by graphing

$$x^2 - 16x - 62 =$$



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