

# Alg 2 Work for Net

Yesterday Mon

Wed

Thurs

~~Mon~~

## Steps to FOIL:

$$(2x + 3y)(x - 2y)$$

Original Problem

$$(2x+3y)(x-2y)$$

Multiply the First terms:

$$(2x)(x) = 2x^2$$

$$2x^2$$

$$(2x+3y)(x-2y)$$

Multiply the Outside terms:

$$(2x)(-2y) = -4xy$$

$$2x^2 - 4xy$$

$$(2x+3y)(x-2y)$$

Multiply the Inside terms:

$$(3y)(x) = 3xy$$

$$2x^2 - 4xy + 3xy$$

$$(2x+3y)(x-2y)$$

Multiply the Last terms:

$$(3y)(-2y) = -6y^2$$

$$2x^2 - 4xy + 3xy - 6y^2$$

$$2x^2 - \cancel{xy} - 6y^2$$

Combine like terms:

$$-4xy + 3xy = -xy$$

$$2x^2 - \cancel{xy} - 6y^2$$

Solution.

## Steps for Box Method:

Original Equation:  $(2X + 3Y)(X - 2Y)$

|      |                           |                              |
|------|---------------------------|------------------------------|
|      | $X$                       | $-2Y$                        |
| $2X$ | Multiply: $2X * X = 2X^2$ | Multiply: $2X * -2Y = -4XY$  |
| $3Y$ | Multiply: $3Y * X = 3XY$  | Multiply: $3Y * -2Y = -6Y^2$ |

$$2X^2 - 4XY + 3XY - 6Y^2$$

$$2X^2 - XY - 6Y^2$$

Combine the Like Terms

## Solving Quadratic Equations by Factoring

Solve each equation by ~~factoring~~ putting it in  $ax^2 + bx + c = 0$  form

1)  $(k + 1)(k - 5) = 0$

2)  $(a + 1)(a + 2) = 0$

3)  $(4k + 5)(k + 1) = 0$

4)  $(2m + 3)(4m + 3) = 0$

5)  $x^2 - 11x + 19 = -5$

6)  $n^2 + 7n + 15 = 5$

7)  $n^2 - 10n + 22 = -2$

8)  $n^2 + 3n - 12 = 6$

9)  $6n^2 - 18n - 18 = 6$

10)  $7r^2 - 14r = -7$

## Finding a Perfect Square: Taking Square Roots

Quadratics are dealing with variables being squared.

When you have a “squared” item the Opposite Operation is to take the “Square Root”.

As a basic Practice if you just have a Squared Variable and a Constant, balance the equation to get the Variable on one side of the equal sign and the Constants on the other.

Example 1.

$$X^2 = 16$$

$$\sqrt{X^2} = \sqrt{16}$$

$$X = 4$$

Example 2.

$$\begin{array}{r} 2X^2 + 6 = 38 \\ \underline{-6 \quad -6} \end{array}$$

$$\frac{2X^2}{2} = \frac{32}{2}$$

$$\sqrt{X^2} = \sqrt{16}$$

$$X = 4$$

## Solving Quadratic Equations with Square Roots

Solve each equation by taking square roots.

1)  $k^2 = 76$

2)  $k^2 = 16$

3)  $x^2 = 21$

4)  $a^2 = 4$

5)  $x^2 + 8 = 28$

6)  $2n^2 = -144$

7)  $-6m^2 = -414$

8)  $7x^2 = -21$

9)  $m^2 + 7 = 88$

10)  $-5x^2 = -500$

11)  $-7n^2 = -448$

12)  $-2k^2 = -162$

13)  $x^2 - 5 = 73$

14)  $16n^2 = 49$

# Graphing a Quadratic Equation:

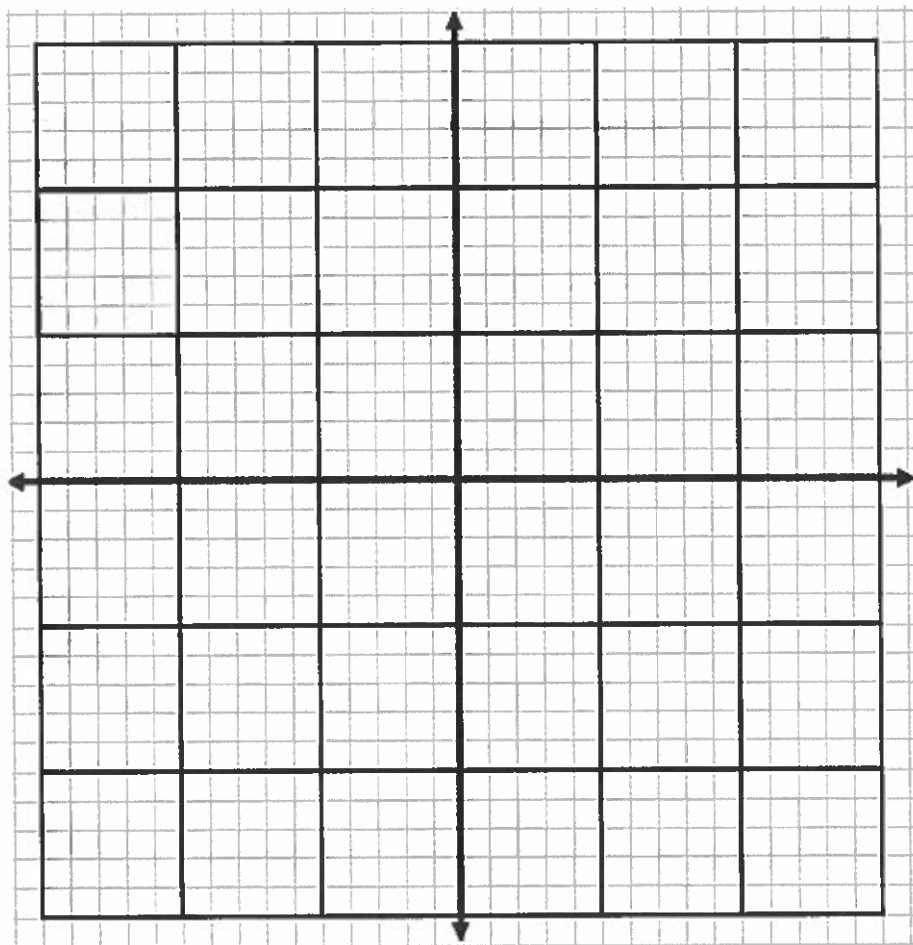
## By Hand:

Start with your equation:

$$y = 2x^2 - 16x + 33$$

Make a Table using both Negative and Positive Integers as the values of X.

| X  | Y  |
|----|----|
| -2 | 73 |
| -1 | 19 |
| 0  | 33 |
| 1  | 19 |
| 2  | 9  |



## By Calculator:

Plug the Equation into the Graphing Calculator in the (y=) button.

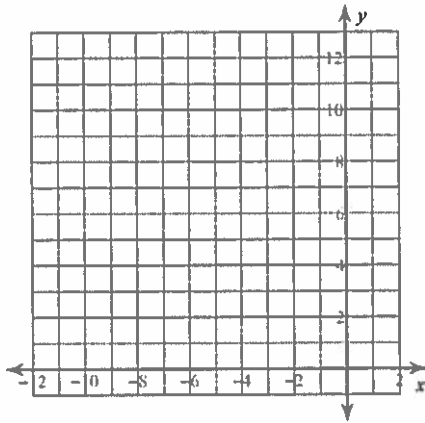
Then hit (Graph) to see it visually graphed for you.

To get the Table, hit the (2<sup>nd</sup>) button then (Graph).

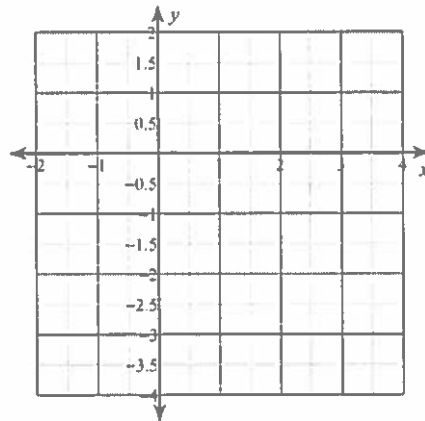
Graphing Quadratic Functions

Sketch the graph of each function.

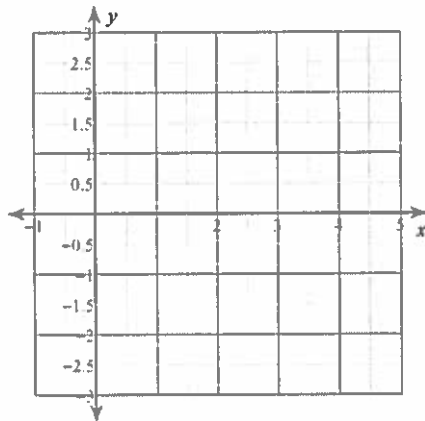
1)  $y = 3x^2$



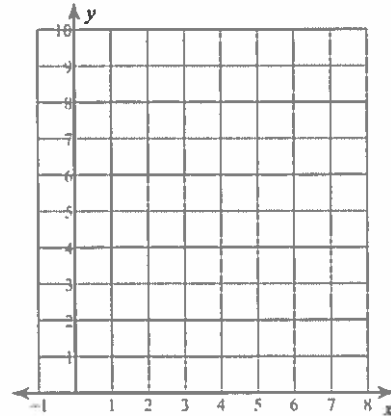
2)  $y = -\frac{1}{2}x^2$



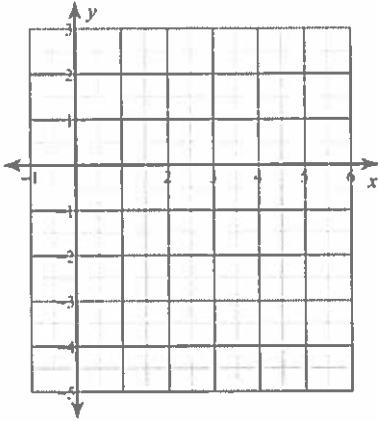
3)  $y = -x^2 + 2x + 1$



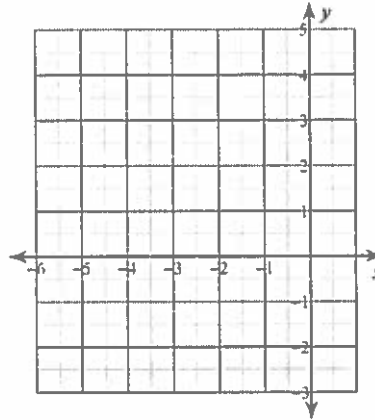
4)  $y = 2x^2 - 16x + 33$



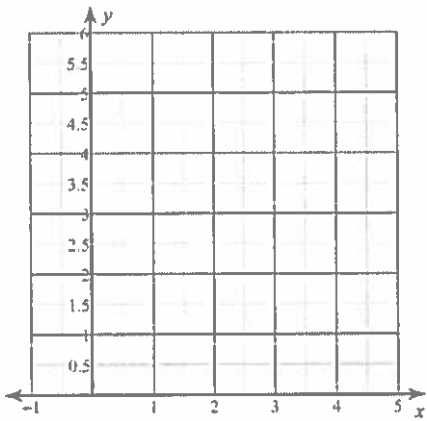
5)  $y = x^2 - 8x + 13$



6)  $y = -x^2 - 8x - 13$



7)  $y = (x - 3)^2 + 1$



8)  $y = \frac{1}{2}(x - 4)^2 - 2$

