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CHAPTER 9B

Solving Quadratics

If You know how to solve this,

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Thank a math teacher

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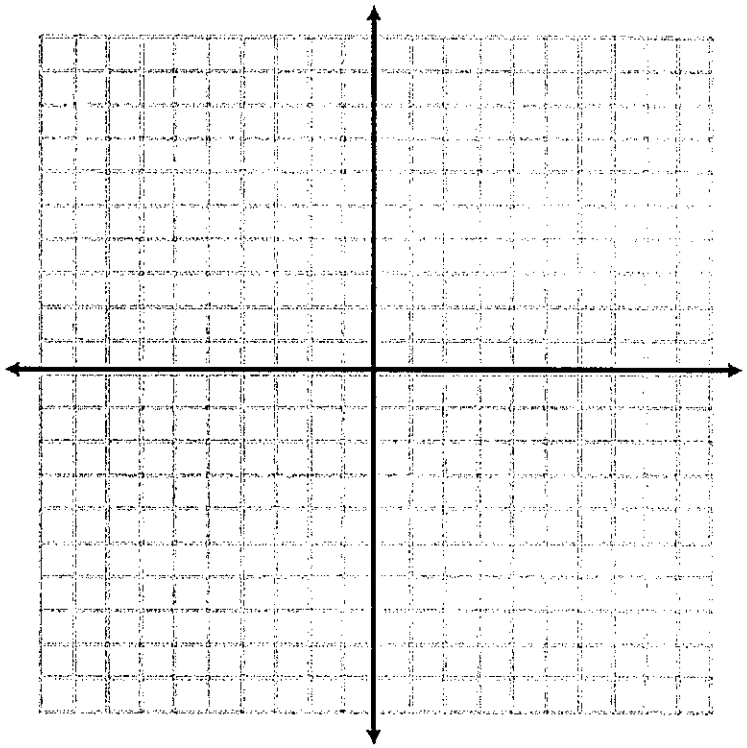
Solving by Graphing

STEPS:

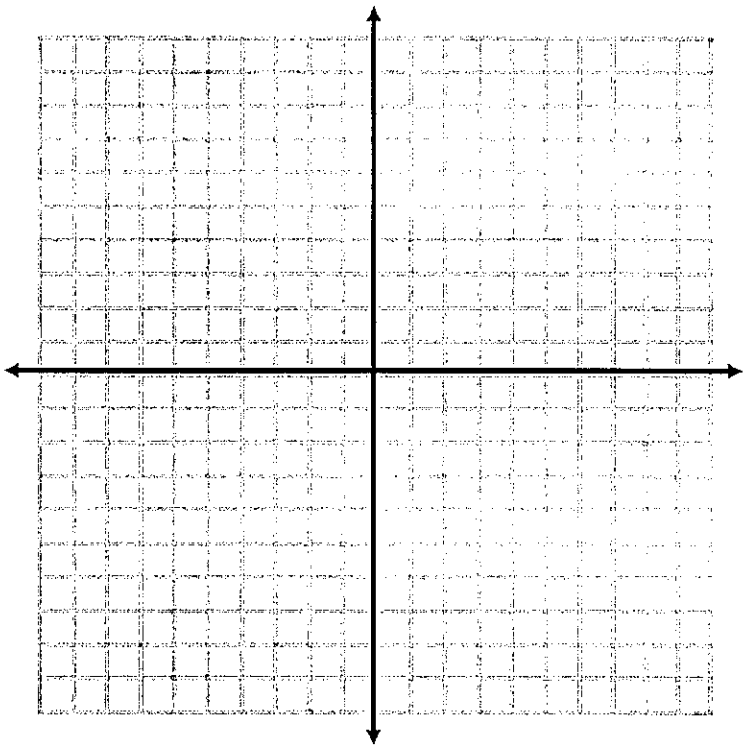
1. Replace the "y" with a "0" and get it alone.
2. Graph the related function.
3. Find the zeros.

Practice

1. $x^2 - 2x - 3 = 0$



2. $-2x^2 + 4 = 2x$



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Solving by Graphing on the Calculator

STEPS:

1. Get the "y" alone.
2. Graph the function on your calculator: Push " Y = " and type the equation in, then push "GRAPH"
3. Find the zeros using your calculator: Push "2nd - CALC", then arrow down to "2: zero" and press "ENTER". Move the little bug to the left and right of each zero, pressing enter on each side and write down the zeros from the bottom of your screen.

Practice

1. $2x^2 + 7x = 15$

2. $3x^2 - 6x = 0$

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Solving by Factoring

STEPS:

1. Make sure the equation is equal to "0".
2. Factor each quadratic into: (x)(x).
3. The zeros can be found by finding the opposite of each number you filled in!

Practice

1. $x^2 + x - 12 = 0$

2. $x^2 - 5x - 24 = 0$

3. $x^2 = -8x - 16$

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Solving by Equation Solving

STEPS:

1. Get the "x^2" alone.
2. Take the square root at the end.

*Remember...you cannot take the square root of a negative number AND positive numbers will always have TWO square roots.

Practice

1. $4x^2 = 400$

2. $2x^2 - 15 = -13$

3. $-36x^2 = 25$

4. $64x^2 - 16 = 0$

5. $12 - x^2 = 30$

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Solving by Equation Solving: Continued...

1. $x^2 = 16$

2. $x^2 - 5 = 139$

3. $4x^2 + 1 = 17$

4. $(x-3)^2 = 64$

5. $6(x+1)^2 = 6$

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Solving using the Quadratic Formula

STEPS:

1. Your equation must be in standard form and set equal to zero before starting!
2. Pick out "a", "b", and "c".
3. Find your zeros by plugging "a", "b", and "c" into the following equation...

Quadratic Formula:

Practice

1. $10x^2 - 13x = 3$

2. $2x^2 + 5 = 3x$

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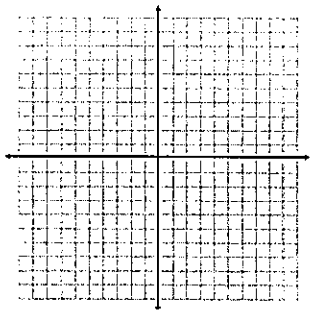
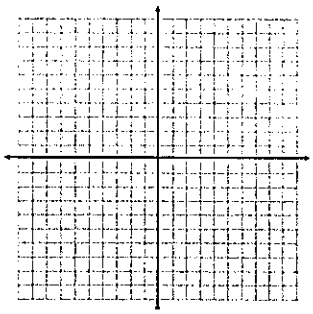
Solving using the Quadratic Formula: Continued...

The Discriminant:

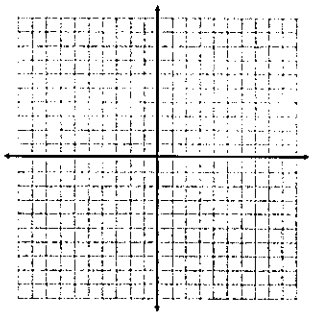
If the discriminant is MORE than 0...



If the discriminant is EQUAL to 0...



If the discriminant is LESS than 0...



Practice

Find the number of solutions to the quadratic and then solve.

1. $6x^2 = 3x + 4$