Chapter 3: Quadratic Equations and Complex Numbers:

3.1 Solving Quadratic Equations

Class Discussion: How do you solve a quadratic equation?

3 Methods:

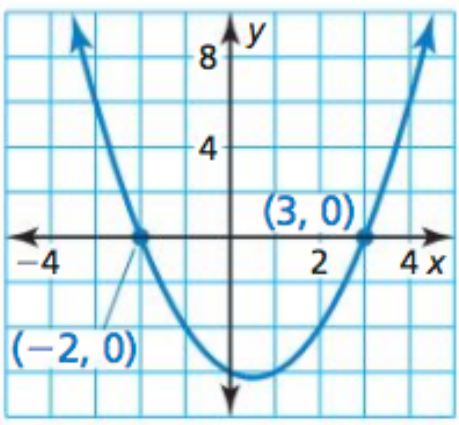
- By Graphing
- Using Square Roots
- Factoring

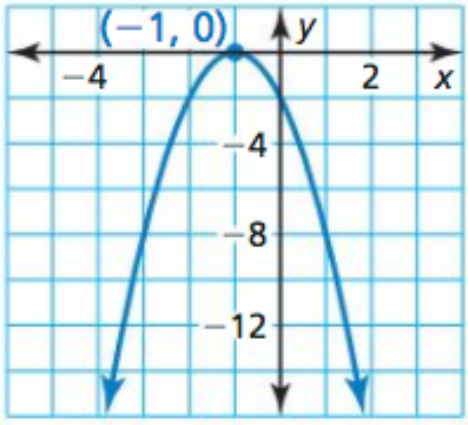
What is a Root of an equation?

A root of an equation is a solution of the equation. (think zeros or x intercepts)

Using your calculators graph the following equations separately.

$x^2 - x - 6 = y$ and $-2x^2 - 4x - 2 = y$





What point(s) stand out?

Try to solve each equation below:

A) $4x^2 - 31 = 49$

b) $3x^2 + 9 = 0$

c) $\frac{2}{5}(x + 3)^2 = 5$

What is so special about zero?

Core Concept

Zero-Product Property

Words If the product of two expressions is zero, then one or both of the expressions equal zero.

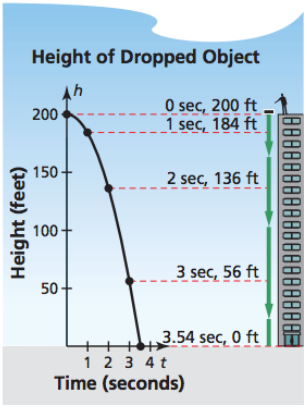
Algebra If A and B are expressions and $AB = 0$, then $A = 0$ or $B = 0$.

Lets try solving $x^2 - 4x = 45$ using the Zero-Product Property

Solving Real World Problems:

A monthly gamming magazine has 48,000 subscribers when it charges $20 per annual subscription. For each $1 increate in price, the magazine loses about 2000 subscribers. How much should the magazine charge to maximize annual revenue? What is the maximum annual revenue?

When an object is dropped, its height h (in feet) above the ground after t seconds can be modeled by the function $h = -16t^2 + h_o$ where h_o is the initial height (in feet) of the object. The graph $h = -16t^2 + h_o$ representing the height of an object dropped from an initial height of 200 feet. Is shown below.



For this experiment the object will be dropped from a height of 50 feet.

a. Write a function that gives you the height h (in feet) of the container after t seconds.

b. How long does the container take to hit the ground?

c. Determine the change in height of the object after 1 second and 1.5 seconds.

Homework: Pg99 # 3-19 odd, 23, 27, 28, 29, 57 & 58