Sec 6-4: Solving Polynomial Equations

- Solve by factoring
- Solve by graphing

How do you find solutions
if you can't factor a polynomial?

Solve by graphing

But, this will only give you real solutions.

You can solve using graphing by:

1. Graphing the two sides separately
   and find points of intersection.

2. Moving all terms to one side and finding the
   x-intercepts(zeros) by:
   a. 2nd TRACE Option 2: zero

   b. Graphing the eq in Y_1 and Y_2=0 and finding
      points of intersection.

Find all real solutions by graphing.

$3x^2 - 3x + 2 = x^3 - 2x^2 + 3$

$X = -.24, 1, 4.24$

Find all real solutions by graphing.

$x^4 - 3x = 2x^2 - 2.4x - 0.28$

$X = -1.11, -.65, .26, 1.51$

You can now finish Hwk #28: Sec 6-4

Page 330 Due tomorrow

Problems: 23, 24, 29, 30, 33, 36

How does the following factor?

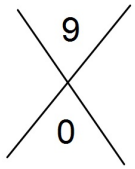
$\sqrt{4x^2} - \sqrt{25} = (2x + 5)(2x - 5)$

difference of perfect squares always factors:

$a^2 - b^2 = (a + b)(a - b)$

Is there a way to factor the sum of perfect squares?

$x^2 + 9$



If two numbers multiply to a positive they would have the same sign,
and two numbers with the same sign don't add to zero!

what are these numbers?

Perfect Cubes

1, 8, 27, 64, 125, ...

1^3 2^3 3^3 4^3 5^3

Factoring the difference of perfect cubes:

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

Factor the following:

1. $x^3 - 64$ $\quad a^3 - b^3$

$= (x - 4)(x^2 + 4x + 16)$

$a = x$

$b = 4$

Factor:

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

2. $8m^3 - 125$

$(2m)^3 - (5)^3$

$a = 2m$

$b = 5$

$= (2m - 5)(4m^2 + 10m + 25)$