Find ALL Complex solutions.

$5x^2 - 18x = -6x^3 + 15$

$6x^3 + 5x^2 - 18x - 15 = 0$

$x^2(6x+5) - 3(6x+5)$

$(x^2-3)(6x+5)$

$x = \pm\sqrt{3}, -5/6$

$6x+5=0$

$-5 \quad -5$

$\frac{6x}{6} = \frac{-5}{6}$

$x = -5/6$

$x^2 - 3 = 0$

$+3 \quad +3$

$\sqrt{x^2} = \sqrt{3}$

$x = \pm\sqrt{3}$

Find ALL Complex solutions.

$4x^3 + 5x + 1 = 32x - 44 + 7x^3 - 5x^2$

$-4x^3 \quad -5x \quad -1 \quad -5x \quad -1 \quad -4x^3$

$0 = 3x^3 - 5x^2 + 27x - 45$

$0 = (3x-5)(x^2+9)$

$x = \frac{5}{3}, \pm 3i$

	$3x$	-5
x^2	$3x^3$	$-5x^2$
$+9$	$+27x$	-45

$x^2 + 9 = 0$

$-9 \quad -9$

$\sqrt{x^2} = \sqrt{-9}$

$x = \pm 3i$

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 #27: Sec 6-4

Page 330 Due tomorrow

Problems: 23, 24, 29, 30, 33, 36, 47, 54

Difference of Perfect Squares

Factor. $49x^2 - 81 = 7x \pm 9$

Sum of Perfect Squares Doesn't Factor!

what are these numbers?

Perfect Cubes

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

Factoring the difference of perfect cubes:

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

Factor the following:

1. $Q^3 - 27 = (Q - 3)(Q^2 + 3Q + 9)$

$a^3 = b^3$

$a = Q$

$b = 3$

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

Factor: 2. $125m^3 - 216 = (5m - 6)(25m^2 + 30m + 36)$

$a = 5m$

$b = 6$

$(5m)^2$