Section 9-8: Factoring Four Terms

How would you factor this?

$2m^3 + 3m^2 - 8m - 12$

Sec 9-8: Factoring a polynomial with 4 terms.

$2m^3 + 3m^2 - 8m - 12$

The textbook calls this

"Factor by Grouping"

How would you group these four terms?

$2m^3 + 3m^2 \mid - 8m - 12$

GCF GCF

$m^2(2m + 3)$ $- 4(2m + 3)$

$m^2(2m + 3) - 4(2m + 3)$

GCF

$(2m + 3)(m^2 - 4)$

$(2m+3)(m+2)(m-2)$

Another way to factor with 4 terms

$2m^3 + 3m^2 - 8m - 12$ $2m$ $+3$ $= (2m+3)(m^2-4)$

$(2m+3)(m\pm 2)$

Use the Box!

m^2	$2m^3$	$+3m^2$
-4	$-8m$	-12

Factor.

$2m^3 + 7m^2 - 12m - 42$ $(2m+7)(m^2-6)$

	$2m$	$+7$
m^2	$2m^3$	$+7m^2$
-6	$-12m$	-42

Factor completely.

GCF

$15a^4 + 5a^3 - 135a^2 - 45a$

$5a(3a^3 + a^2 - 27a - 9)$ (a^2-9)

$5a(3a+1)(a\pm 3)$

a^2	$3a$	$+1$
-9	$3a^3$	$+a^2$
	$-27a$	-9

You can now do Hwk #23:

Sec 9-8 Due Tomorrow

Pages 499-500

Problems 35-38, 42, 43

Factoring steps

Polynomial with 4 terms:

1. Look for GCF
2. After this try factoring with the "Box"
   (factor by grouping)

For each binomial look to see if
it is the difference of Perfect Squares!

Square Roots of Perfect Squares are Whole Numbers

$\sqrt{36} = 6$

$\sqrt{144} = 12$

$\sqrt{289} = 17$

Is 1440 a perfect square?

$\sqrt{1440} \approx 37.95$

1440 is not a perfect square because its square root is not a whole number.

Simplify this square root.

1. $\sqrt{75} = \sqrt{25 \cdot 3} = \sqrt{25} \cdot \sqrt{3}$

$= 5\sqrt{3}$

Simplify each

2. $\sqrt{63}$

$= \sqrt{9 \cdot 7}$

$= \sqrt{9} \cdot \sqrt{7}$

$= 3\sqrt{7}$

3. $\sqrt{32}$

$= \sqrt{4 \cdot 8}$

$= 2\sqrt{8}$

$= 2\sqrt{4 \cdot 2}$

$= 2 \cdot 2\sqrt{2}$

$= 4\sqrt{2}$

or $= \sqrt{16 \cdot 2}$

$= 4\sqrt{2}$