Four Term Factoring P.98

Essential Question: How do I factor a polynomial with four terms?

Factor the following polynomial.

$$3x^3 - 4x^2 + 6x - 8$$ ✓

Using the box

1. Reorder polynomial with exponents in order from greatest to least.
2. Put each term in a section of the box (sign included)
3. Find the GCF of each row & column.
4. Factors are on the sides of box...write them as a product. ( )( )

$3x^3 - 4x^2 + 6x - 8$

	3x	−4
$1x^2$	$3x^3$	$-4x^2$
+2	+6x	−8

$3x^3$: 1, 3, x, x, x — $+6x$: 2, 3, x — GCF: x

Both neg → take out neg

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

Check answers by multiplying factors.

2. $7x^3 + 2x^2 + 28x + 8$ ✓

	7x	+2
x^2	$7x^3$	$+2x^2$
+4	+28x	+8

$7x^3$: 7, x, x, x — $+28x$: 2, 2, 7, x — GCF: 7x

$(7x+2)(x^2+4)$

3. $-9a^2 + 12a^3 + 15 - 20a$ Reorder!

$12a^3 - 9a^2 - 20a + 15$

	4a	−3
$3a^2$	$12a^3$	$-9a^2$
−5	−20a	+15

$(4a-3)(3a^2-5)$

2 negs in the diagonal → BOTH factors neg!

4. $10b^3 - 16b^2 + 25b - 40$

	5b	−8
$2b^2$	$10b^3$	$-16b^2$
+5	+25b	−40

$= (5b-8)(2b^2+5)$

5. $2y^3 - y^2 - 3 + 6y$ Reorder!

$2y^3 - y^2 + 6y - 3$

	2y	−1
y^2	$2y^3$	$-y^2$
+3	+6y	−3

$= (2y-1)(y^2+3)$

☺

#1-12

Algebra I - Unit 8: Topic 1 – Four Term Grouping

Practice – Four Term Grouping **pp 524 – 537**

Name _____ Date _____ Period_____

Factor the polynomial expression using the box or the four-term grouping method.

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

2. $4b^3 - 6b^2 + 10b - 15$

3. $2m^3 - 2m^2 + 3 - 3m$

4. $-5k^2 + k^3 - 4k + 20$

5. $-8a^2 + 2a^3 - 12 + 3a$

6. $6x^3 + 18x^2 + x + 3$

7. $4t^3 + 7 + 4t + 7t^2$

8. $-24y^2 - 3y + 36 + 2y^3$

Match each polynomial with its correct factors. multiply answer choices

✓ can't put in box!

9. $x^2 + 7x + 10$

10. $2x^3 + 5x^2 + 6x + 15$

11. $x^2 - 49$

12. $4x^2 + 4x - 3$

A. $(x+7)(x-7)$

B. $(2x-1)(2x+3)$

C. $(x+5)(x+2)$

D. $(x^2+3)(2x+5)$

HW Help - Four Term Grouping

No work = no credit = no kidding!

Don't forget to reorder...biggest exponent first. If there are 2 negatives in your box, then at least one factor will be negative. The order you put your binomials doesn't matter.

1. $(3x + 2)(2x^2 + 1)$
2. $(2b - 3)(2b^2 + 5)$
3. $(m - 1)(2m^2 - 3)$
4. $(k - 5)(k^2 - 4)$
5. $(a - 4)(2a^2 + 3)$
6. $(x + 3)(6x^2 + 1)$
7. $(4t + 7)(t^2 + 1)$
8. $(y - 12)(2y^2 - 3)$

9. C
10. D
11. A
12. B

For #9 - 12, you can only put 4 terms into the box. Try to multiply your answer choices to match to the polynomial.

I will not be here for the rest of the week. If you need help, please find another math teacher for tutorials! They won't bite, promise. Don't forget about Mrs. Cole in A106.