Section 10.8 (B) Factoring by Grouping

Steps:
1. Find the GCF
2. Group first two terms and the last two terms (make sure that there is a + between each ()
3. Factor out GCF from each ()
4. Use Distributive Property: There will be a "copy" if you did it correctly.
5. Check for further factoring

a. $(2x^3 + 3x^2) - (2x - 3)$

$x^2(2x+3) - 1(2x+3)$

$(2x+3)(x^2-1)$

* This problem will be factored further after 10.7

b. $(x^3 - 2x^2) + (3x - 6)$

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

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

c. $(2x^3 - 10x^2) + (3x - 15)$

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

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

d. $(6x^3 - 16x^2) + (21x - 56)$

$2x^2(3x-8) + 7(3x-8)$

$(3x-8)(2x^2+7)$

Factor Completely.

e. $7x^3 - 7x^2 - 84x$

$b^2 - 4ac$

$D = (-1)^2 - 4(1)(-12)$

$1 + 48$

$D = 49$

$-12 \quad -1$

12
$2 \quad 6$
$3 \quad 4 \quad 3 \quad -4$

$7x(x^2 - x - 12)$

$7x(x+3)(x-4)$

$D = (-5)^2 - (4)(1)(8)$

$25 - 12 = 9$

$D = 9$

f. Solve. $2x^3 - 10x^2 + 8x = 0$

$2x(x^2 - 5x + 8) = 0$

$4 \quad -5$

$14 \quad -1 \quad -4 = -5$

22

$2x(x-1)(x-4) = 0$

$2x = 0 \quad x - 1 = 0 \quad x - 4 = 0$

$x = 0 \quad x = 1 \quad x = 4$