Math 1030, Homework Activity #11, Summer 2014 Name KEY
Sections 6.3

Instructions: Complete the following problems. You may work alone or in a group. Do not just copy answers from a group member, but be sure that you understand the problem. Similar questions will appear on exams. You may be asked to explain or present the answers to the class. This assignment is due at the end of the class period.

1. For each of the problems below, factor them by trial and error, and then by grouping. Or state that the polynomial is prime.
   a. $2x^2 + 13x + 15$ $(2x+3)(x+5)$
   b. $7n^2 - 27n - 4$ $(7n+1)(n-4)$
   c. $4w^2 - 8w - 5$ $(2w+1)(2w-5)$
   d. $6m^2 - 5m - 4$ $6m^2-8m+3m-4 = 2m(3m-4)+1(3m-4) = (3m-4)(2m+1)$
   e. $11z^2 + 32z - 3$ $(11z-1)(z+3)$
   f. $5x^2 - 11x + 2$ $(5x-1)(x-2)$
   g. $6x^2 + 2xy - 4y^2$ $2(3x^2+xy-2y^2) = 2(3x-2y)(x+y)$

2. Which method do you like better? Why?

   answers will vary, but I like trial & error when there are only a few factors and grouping when there are a lot. trial & error is also easier w/o a calculator

3. Factor completely, by any method.
   a. $15x^2 - 23x + 4$ $15x^2-20x-3x+4 = 5x(3x-4)-1(3x-4) = (5x-1)(3x-4)$
   b. $10x^2 - 8xy - 24y^2$ $2(5x^2-4xy-12y^2) = 2(5x+6y)(x-2y)$
   c. $4x^3y^2 - 8x^2y^3 - 4x^2y^2$ $4x^2y^2(x-2y-1)$
   d. $15x^2 - 4x + 8$ Prime
   e. $30x + 22x^2 - 24x^3$ $-2x(12x^2-11x-15) = -2x(12x^2-20x+9x-15) = -2x[4x(3x-5)+3(3x-5)]$
   f. $6x^2(x^2+1) - 25x(x^2+1) + 14(x^2+1)$ $(x^2+1)(6x^2-25x+14) = (x^2+1)(6x^2-21x-4x+14) = (x^2+1)[3x(2x-7)-2(2x-7)]$ $= -2x(3x-5)(4x+3)$ $= (x^2+1)(3x-2)(2x-7)$
   g. $27z^4 + 42z^2 + 16$
   h. $15n^6 + 7n^3 - 2$
   i. $3x^{2n} + 19x^n + 6$

4. Find the values of c for which the polynomial is factorable.
   a. $3x^2 + cx - 5$ 15: 1,15, 3,5 $c = 14, -14, 2, -2$
   b. $6x^2 + cx + 7$ 42: 1,42, 2,21, 3,14, 6,7 $c = \pm 43, \pm 23, \pm 17, \pm 13$

g. $(9z^2+8)(3z^2+2)$

h. $(3n^3+2)(5n^3-1)$

i. $(3x^n+1)(x^n+6)$