Name:_____ Date:_____

PC: Review of Factoring Ms. Loughran

When factoring a polynomial go through this list in your mind:

1. GCF: Look for all factors that are common to all terms of the polynomial, pull out the greatest common factor.

2. Difference of two squares: If the polynomial is a binomial, look to see if it is the difference of two squares.

   - Remember you can NOT factor the sum of two squares.

3. Trinomials: $ax^2 + bx + c$ If the polynomial is a trinomial then look at the leading coefficient, a.

   If the leading coeffient is one ($a = 1$), use the add multiply method. Look for numbers that multiply to c while adding to b.

   If the leading coefficient is not equal to one ($a \neq 1$) use factoring by trial and error or the AC method.

The AC Method

a. Form the product ac

b. Find a pair of numbers whose product is ac and whose sum is b

c. Rewrite the polynomial so that the middle term (bx) is written as the sum of the two terms whose coefficients are the two numbers found in step b

d. Factor by grouping

4. Grouping: If the polynomial has 4 terms, try factoring by grouping.

5. Final check: Always make sure that the factors you end up with are completely factored. If you have overlooked a common factor, you can catch it here.

Exercises

1) $2x^2 - 18$

2) $3y^2 - 48$

3) $a^4 - 16$

4) $5a^2 - 30a + 45$

5) $4a^2 + 16a + 16$

6) $-x^2 + 50x - 625$

7) $ax - bx + ay - by$

8) $2ax + 3 + x + 6a$

9) $x^3 - 3x^2 - 9x + 27$

10) $3x^2 + 5x - 2$

11) $12a^2b^2 - 3ab$

12) $x^2 - 4x + 2xy - 8y$

13) $x^2 - 16y^2$

14) $x^2 - 9x + 18$

15) $3a^2 - 2ax - 3a + 2x$

16) $a^2 - 2a + ab - 2b$

17) $6x^2 + 13x + 6$

18) $x^4 - 11x^3 + 24x^2$

19) $8x^2 - 6x - 2$

20) $9x^2 - 12x + 4$

21) $a^3 - a^2b - a + b$

22) $x^2 + 6x + 5$

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

24) $n^2 + 5n + 6$

25) $n^2 - 10n + 25$

26) $m^2 + 3ms - 4s^2$

27) $y^2 + 4y - 12$

28) $y^2 - y - 30$

29) $t^2 - 14t - 72$

30) $6 - x - x^2$

31) $36 + 5x - x^2$

32) $36s^2 + 12s + 1$

33) $6s^2 + 30s - 900$

34) $2a^4 - 10a^3 - 72a^2$

35) $2x^3 - 3x^2 - 2x + 3$

36) $(x - 1)^2 - 4$

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

38) $16 - (2x - 1)^2$

39) $4a^2 - 4ab - 36 + b^2$

40) $2a^3 - 16a^2 + 32a$