Ch 9.7

Factoring Special Cases

Perfect-Square Trinomials

RULE: $a^2+2ab+b^2 = (a+b)(a+b) = (a+b)^2$

$a^2-2ab+b^2 = (a-b)(a-b) = (a-b)^2$

Recognizing a perfect-square tri:

- The 1st & last terms are perfect squares. Variable exponents are divisible by 2.
- The middle term is twice the product of the roots of the 1st & last terms.

* You can still use previous factoring methods to factor. Foil to check answer.

Examples: $y^2 -6y +9$ | $4m^2-36m+8$

y 3 | $2m$ 9

*2(3*y) = 6y* | *2(2m*9)= 36m*

so $(y-3)^2$ | $(2m-9)^2$

Try some

Factor each expression.

1. $n^2 + 8n + 16$

2. $b^2 + 16b + 64$

3. $y^2 - 16y + 64$

4. $4x^2 + 36x + 81$

5. $9n^2 - 12n + 4$

Difference of Two Squares

RULE: $a^2-b^2 = (a+b)(a-b)$

If the 1st & last terms are perfect squares & the sign is a minus then you have a Difference of 2 Squares. Variable exponents are divisible by 2.

Examples: $d^2 - 49$ $9v^4 - 4w^6$

d 7 $3v^2$ $2w^3$

So $(d+7)(d-7)$ $(3v^2+2w^3)(3v^2-2w^3)$

Sometimes you have to factor out a GCF 1st.

Examples: $8y^2 – 50$ GCF: 2 $2(4y^2 – 25)$

$2y$ 5

So $2(2y+5)(2y-5)$

Try some

Factor each expression. *bonus pts

1. $x^2 - 36$
2. $b^2 - 100$
3. $25y^2 - 64$
4. $4w^2 - 49$
5. $3c^2 - 75$

*6. $32x^4 - 2$