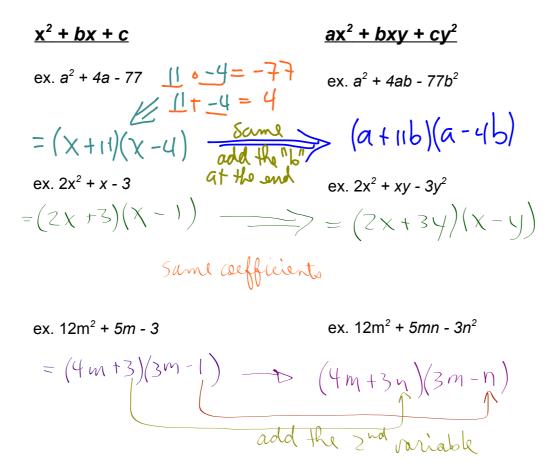
## 3.8a Factoring special polynomials

## I. Trinomials with 2 variables

If a trinomial is of the form  $ax^2 + bxy + cy^2$ , factor as usual (3.5) but add the extra variable at the end of the factored binomials.



II. A perfect Square Trinomial is a ex. 
$$p^2 + 10pq + 25q^2$$
 trinomial that breaks down into two identical factors. Thus, its area model is a square.

When the two factors =  $(p + 5q)(p + 5q)$  are the same you know it's a partect square tribonial =  $(p + 5q)^2$ 

## III. A Difference of Squares ... are of the form

a<sup>2</sup>-b<sup>2</sup> = 
$$(a+b)(a-b)$$

A D.O.S. is always a binomial with a negative in the middle.

ex. a) 
$$y^2 - 25$$
 - Sy b)  $x^2 - 169$ 

$$= (y - 5)(y + 5)$$

$$= (x - 13)(x + 13)$$

$$c) 9x^2 - 49$$

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

$$d) 16x^4 - z^6$$

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

c) 
$$9x^2 - 49$$
 d)  $16x^4 - z^6$   
=  $(3x + 7)(3x - 7)$  =  $(4x^2 + 2^3)(4x - 2^3)$ 

e) 
$$121x^{4}y^{2}-64y^{8}$$

$$= (1x^{2}y+8y^{4})(11x^{2}y-8y^{4}) = 5(x^{4}-16y^{4}) \text{ factor ist}$$

$$= 5(x^{2}+4y^{2})(x^{2}-4y^{2}) \text{ still a}$$

$$= 5(x^{2}+4y^{2})(x^{2}-4y^{2}) \text{ still a}$$

$$= 5(x^{2}+4y^{2})(x+2y)(x-2y)$$

$$= 2(81a^{4}-w^{4})$$

$$= 2(9a^{2}+w^{4})(9a^{2}-w^{4})$$

$$= 2(9a^{2}+w^{4})(3a+w^{2})(3g-w^{2})$$

$$a) a^2 + 4a - 77$$

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

$$e) 12m^{2} + 5m - 3$$

g) 
$$p^2 + 10pq + 25q^2$$
 h)  $4x^2 - 20x + 25$ 

$$(m) 25 W^2 - 36 X^2$$

$$d) z x^2 + \chi y - 3 y^2$$

e) 
$$12m^{2} + 5m - 3$$
 f)  $12m^{2} + 5mn - 3n^{2}$ 

$$h)4x^{2}-20x+25$$

$$j) \times {}^{2} + 100 \times 10^{-169} y^{2}$$

$$= (x - 13y) (x + 13y)$$

$$m) 16 \chi^{2} - 2^{3}) (4 \chi^{2} + 2^{3})$$

$$= (4 \chi^{2} - 2^{3}) (4 \chi^{2} + 2^{3})$$

$$P) 5x^{4} - 80y^{4}$$

$$= 5(x^{4} - 16y^{4})$$

$$= 5(x^{2} + 4y^{2})(x^{2} - 4y^{2})$$

$$= 5(x^{2} + 4y^{2})(x + 2y)(x - 2y)$$