

Distributive Property!

Unit 3: Polynomials

3.10 Factoring $ax^2+bx+cy^2$

**When you have two variables in a trinomial,
factor by decomposition.**

- Recall: The steps for factoring by decomposition are as follows:
- 1) Diamond method to find your magic numbers.
 - 2) Replace your middle term with your magic numbers.
 - 3) Factor by grouping!

Distributive Property!

Ex.) Factor the following polynomials.

a) $x^2 + 13xy + 30y^2$

$= \frac{x^2}{x} + \frac{3xy}{x} + \frac{10xy}{10y} + \frac{30y^2}{10y}$

$(x)(x+3y) + (10y)(x+3y)$

$(x+3y)(x+10y)$

b) $3a^2 - 15ab - 252b^2$

$= 3(a^2 - 5ab - 84b^2)$

$= 3\left[\frac{a^2}{a} - \frac{12ab}{a} + \frac{7ab}{7b} - \frac{84b^2}{7b}\right]$

$3[a(a-12b) + 7b(a-12b)]$

$3(a-12b)(a+7b)$

Distributive Property!

c) $2x^2 - 5xy + 2y^2$

$= \frac{2x^2}{x} - \frac{5xy}{x} + \frac{2y^2}{-2y} - \frac{2y^2}{-2y}$

$(x)(2x-y) + (-2y)(2x-y)$

$(2x-y)(x-2y)$

4
-1
-5

-10
-7
3

d) $2n^2 - 7nm - 15m^2$

$= 2n^2 - 10nm + 3nm - 15m^2$

$2n(n-5m) + 3m(n-5m)$

$(n-5m)(2n+3m)$