Algebra 2 Notes
Factoring bootcamp notes

Name Key

Greatest Common Factor

1. $4g^2 - 2g$

$2g(2g-1)$

2. $12x - 9x^3 + 15x^2$

$3x(4 - 3x^2 + 5x)$

Difference of 2■s $(a^2 - b^2) = (a+b)(a-b)$

1. $x^2 - 1$ $(x+1)(x-1)$

2. $4m^2 - 9$ $(2m+3)(2m-3)$

3. $4x^2 - 400$ $4(x^2-100)$
$4(x+10)(x-10)$

4. $2y^5 - 50y$ $2y(y^4-25) = 2y(y^2-5)(y^2+5)$

Factoring Trinomials with leading coefficient of 1

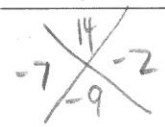
LOOK FOR GCF

1. $x^2 + 3x - 10$

$(x-5)(x+2)$

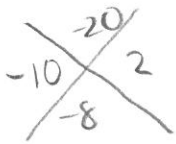
2. $m^4 - 9m^2 + 14$

$(m^2-7)(m^2-2)$



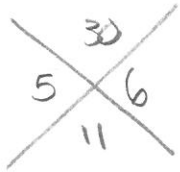
3. $2x^2 - 16x - 40$

$2(x^2-8x-20)$
$2(x-10)(x+2)$



4. $3y^3 + 33y^2 + 90y$

$3y(y^2+11y+30)$
$3y(y+5)(y+6)$



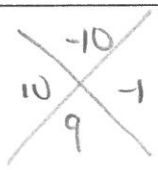
Factoring Trinomials with leading coefficients other than 1

1. $2x^2 + 9x - 5$

$x^2 + 9x - 10$

$(x - \frac{10}{2})(x - \frac{1}{2})$

$(x-5)(2x-1)$



2. $8m^2 + 26m + 15$

$m^2 + 26m + 120$

$(m + \frac{20}{8})(m + \frac{6}{8})$

$(m + \frac{5}{2})(m + \frac{3}{4})$

$(2m+5)(4m+3)$

3. $12x^2 + 2x - 4$

$2(6x^2 + x - 2)$

$2(x^2 + x - 12)$

$2(x + \frac{4}{6})(x - \frac{3}{6})$

$2(x + \frac{2}{3})(x - \frac{1}{2}) \rightarrow 2(3x+2)(2x-1)$

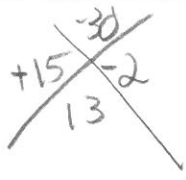
4. $6y^2 + 13y - 5$

$y^2 + 13y - 30$

$(y + \frac{15}{6})(y - \frac{2}{6})$

$(y + 5/3)(y - 1/3)$

$(3y+5)(3y-1)$



Factoring 4 terms by Grouping

1. x^3+2x^2+3x+6

$x^2(x+2)+3(x+2)$

$(x^2+3)(x+2)$

→ not factorable anymore

2. $9m^3+18m^2-4m-8$

$9m^2(m+2)-4(m+2)$

$(9m^2-4)(m+2)$

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

check anything w/a square term or higher

3. z^3-z^2+5z-5

$z^2(z-1)+5(z-1)$

$(z^2+5)(z-1)$

4. $2y^4-y^3+6y-3$

$y^3(2y-1)+3(2y-1)$

$(y^3+3)(2y-1)$

Factoring Flowchart

Remove the Greatest Common Factor

Count Terms

2 Terms

Difference of 2■s

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

Difference of 2 s

$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Sum of 2 s

$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

3 Terms

Trinomials

$x^2 - 7x + 12 = (x - 3)(x - 4)$

$x^2 - 4x - 12 = (x + 2)(x - 6)$

$6x^2 - 17x - 14 = (3x + 2)(2x - 7)$

4 or more Terms

Grouping

$ax + ay + bx + by$

$(ax + ay) + (bx + by)$

$a(x + y) + b(x + y) = (x + y)(a + b)$

Do any of the factors, factor further?

Write out all factors.

Check your answer by multiplying the factors together.