3.5 Factoring Trinomials Part II

Math 10 **Factoring Trinomials – Part II**

Trinomials with a common factor.

$2x^2 + 6x - 20$

$= 2(x^2 + 3x - 10)$

$= 2(x^2 + 5x - 2x - 10)$

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

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

$3a^2 - 18a + 24$

$= 3[a^2 - 6a + 8]$

$= 3[a^2 - 4a - 2a + 8]$

$= 3[a(a-4) - 2(a-4)]$

$= 3(a-4)(a-2)$

$4t^3 - 24t^2 + 20t$

$= 4t[t^2 - 6t + 5]$

$= 4t[t^2 - 5t - 1t + 5]$

$= 4t[t(t-5) - 1(t-5)]$

$= 4t(t-5)(t-1)$

Trinomials with multiple variables.

$x^2 + xy - 30y^2$

$= x^2 + 6xy - 5xy - 30y^2$

$= x(x+6y) - 5y(x+6y)$

$= (x+6y)(x-5y)$

$m^2 - 5mn - 6n^2$

$= m^2 - 6mn + 1mn - 6n^2$

$= m(m-6n) + 1n(m-6n)$

$= (m-6n)(m+n)$

$2p^2 - 14pq + 24q^2$

$= 2[p^2 - 7pq + 12q^2]$

$= 2[p^2 - 3pq - 4pq + 12q^2]$

$= 2[p(p-3q) - 4q(p-3q)]$

$= 2(p-3q)(p-4q)$

Trinomials of higher degrees.

$a^4 + 2a^2 - 24$ let $a^2 = A$

$A^2 + 2A - 24$

$= A^2 + 6A - 4A - 24$

$= A(A+6) - 4(A+6)$

$= (A+6)(A-4)$

$= (a^2+6)(a^2-4)$

$20 + n^2 - n^4$

$= -n^4 + n^2 + 20$

$= -N^2 + N + 20$

$= -(N^2 - N - 20)$

$= -[N^2 - 5N + 4N - 20]$

$= -[N(N-5) + 4(N-5)]$

$= -(N-5)(N+4)$

$= -(n^2-5)(n^2+4)$

$3d^5 - 6d^3 + 3d$

$= 3d[d^4 - 2d^2 + 1]$

$= 3d[D^2 - 2D + 1]$

$= 3d[D^2 - 1D - 1D + 1]$

$= 3d[D(D-1) - 1(D-1)]$

$= 3d(D-1)(D-1)$

$= 3d(d^2-1)(d^2-1)$

these can be factored → we will learn how to do this in the next lesson

Assignment: handout #2bdfh, 3bdf, 4, 5