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MATH 1314 + MATH 0270
College Algebra with Foundations
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IV. Factorable Trinomials

- Look for two numbers whose product is a the last term and whose sum is the middle term. Those two numbers are your binomials.

(A) $x^2 + 7x + 12$

Sum of 7 → 3, 4 ; Product of 12? → 3, 4

$(x+3)(x+4)$

(C) $x^2 - 12x + 20$

$-10, -2$; $-10 \cdot -2$

$(x-10)(x-2)$

(D) $x^2 - 2x - 35$

$5, -7$; $5, -7$

$(x+5)(x-7)$

(E) $x^2 + 4x - 12$

$6, -2$; $6, -2$

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

(F) $x^2 + 2x + 1$

$1, 1$; $1, 1$

$(x+1)(x+1)$

$(x+1)^2$

(G) $x^2 - 8x + 16$

$(x-4)(x-4)$

$(x-4)^2$

Factor a perfect trinomial

(8) $(98y^2 - 224y + 128)$

Factor out 2

$2(49y^2 - 112y + 64)$

sq. root ; sq. root

$2(7y - 8)^2$

$2(7y-8)^2$

(9) $9y^2 - 3y + \frac{1}{4}$

sq. root ; sq root

$\left(3y - \frac{1}{2}\right)^2$

$\left(3y - \frac{1}{2}\right)^2$

(H) $x^2 + 3x + 5$

* There are no integers whose product of 5 and Sum of 3. Therefor its prime.