

Warm-Up

Fully factor the following:

a) $3x^2y - 12x$
 $= 3x(xy - 4)$

b) $x^2 + 3x - 18$
 $= (x + 6)(x - 3)$

c) $4x^2 - 16$
 $= 4(x^2 - 4)$
 $= 4(x - 2)(x + 2)$

d) $2x^2 + 4x - 6$
 $= 2(x^2 + 2x - 3)$
 $= 2(x + 3)(x - 1)$

e) $9x^2 - y^2 + 4y - 4$
 $= 9x^2 - (y^2 - 4y + 4)$
 $= 9x^2 - (y - 2)(y - 2)$
 $= [3x - (y - 2)][3x + (y - 2)]$
 $= [3x - y + 2][3x + y - 2]$

f) $x^2 - 4x + 7$
 $= (-x)(x)$
 $b^2 - 4ac$
 $= (-4)^2 - 4(1)(7)$
 $= 16 - 28$
 $= -12$ ← negative (not factorable)

{(1)}{3}

Factoring Review: Part 2

Complex Trinomial Factoring/ Decomposition

→ Used when factoring a quadratic trinomial of the form $ax^2 + bx + c$ where the first coefficient $a \neq 1$ and 'a' cannot be easily common factored out.

Fully Factor the following expressions using decomposition:

a) $6x^2 - 1x - 2$
 $= 6x^2 + 3x - 4x - 2$
 $= 3x(2x + 1) - 2(2x + 1)$
 $= (3x - 2)(2x + 1)$

b) $3x^2 + 7x - 20$
 $= 3x^2 + 12x - 5x - 20$
 $= 3x(x + 4) - 5(x + 4)$
 $= (3x - 5)(x + 4)$

c) $10x^2 - 7x + 1$
 $= 10x^2 - 2x - 5x + 1$
 $= 2x(5x - 1) - 1(5x - 1)$
 $= (2x - 1)(5x - 1)$

Using the Aussie Method – A Goofy Method (Do not try this at home):

a) $6x^2 - x - 2$
 $= (2x + 1)(3x - 2)$
 $= (2x + 1)(3x - 2)$