Algebra I

5-7

Backwards FOIL

Simplify.

*) $(x + 5)(x - 3)$

$x^2 - 3x + 5x - 15$

$x^2 + 2x - 15$

Factor.

$x^2 + 2x - 15$

$\downarrow$

$(x+5)(x-3)$

Rules of Signs

1) $ax^2 + bx + c \longrightarrow (\ + \ )(\ + \ )$

2) $ax^2 - bx + c \longrightarrow (\ - \ )(\ - \ )$

If the 2nd sign is +, then two of the 1st sign

3) $ax^2 + bx - c \longrightarrow (\ + \ )(\ - \ )$

4) $ax^2 - bx - c \longrightarrow (\ + \ )(\ - \ )$

is 2nd sign is −, then one of each.

Factor.

1) $x^2 + 5x + 4$

$1,1$ ✓ $1,4$ / $2,2$

$(x+1)(x+4)$

$1x + 4x = 5x$ ✓

Check outsides and insides

$(x+1)(x+4)$

15) $42 - 23k + k^2$

$1,42$ / $2,21$ / $3,14$ / $6,7$ ✓ $1,1$

$(2-1k)(21-1k)$

$-21k - 2k = -23k$ ✓

$(2-k)(21-k)$

Factor.

*) $x^2 + 12x + 28$

$1,28$ / $2,14$ / $4,7$

$(x+2)(x+14)$

$2x + 14x = 16x$ No good

Prime

31) $y^2 + 20yz + 91z^2$

$1,91$ ✓ $7,13$

$(y+7z)(y+13z)$

$7yz + 13yz = 20yz$ ✓

$(y+7z)(y+13z)$

Set equal to zero and solve.

1) $x^2 + 5x + 4 = 0$

$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$a = 1,\ b = 5,\ c = 4$

$x = \dfrac{-5 \pm \sqrt{5^2 - 4(1)(4)}}{2(1)}$

$x = \dfrac{-5 \pm \sqrt{25 - 16}}{2} = \dfrac{-5 \pm \sqrt{9}}{2}$

$= \dfrac{-5 \pm 3}{2} = \dfrac{-2}{2}$ or $\dfrac{-8}{2}$ $\{-1, -4\}$

Pg 215

2-36 even

In addition to the above, set 2-10 equal to zero and solve.