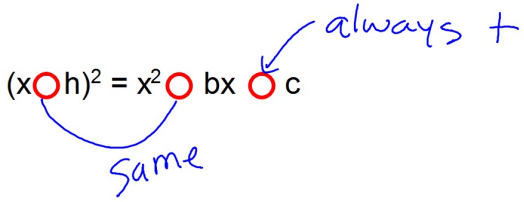
What relationships do you see here?

$$(x+6)^2 = x^2 + 12x + 36$$
$$(x-4)^2 = x^2 - 8x + 16$$
$$(x+11)^2 = x^2 + 22x + 121$$
$$(x-7)^2 = x^2 - 14x + 49$$
$$(x+8)^2 = x^2 + 16x + 64$$
$$(x-5)^2 = x^2 - 10x + 25$$

$(x + h)^2 = x^2 + bx + c$

When expanding,
b is 2 times h.
And c is always
h squared.

Relationships amongst the signs



Fill in the missing values.

$(x + h)^2 = x^2 + bx + c$

$x^2 - 24x + 144 = (x - 12)^2$

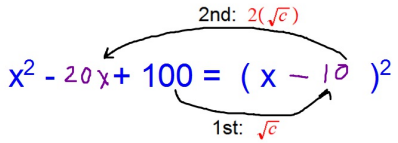
$x^2 + 18x + 81 = (x + 9)^2$

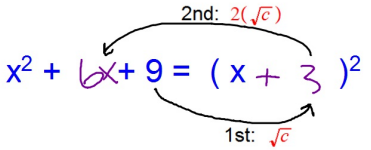
$x^2 - 10x + 25 = (x - 5)^2$

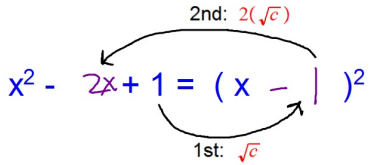
h is found by either finding half of b or the square root of c

The sign of h is alway the same as the sign of b

Fill in the missing values.







Fill in the missing values.

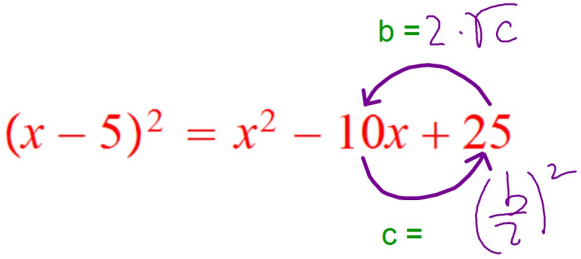
$x^2 - 22x + 121 = (x - 11)^2$ (2nd: $(b/2)^2$; 1st: b/2)

$x^2 + 36x + 324 = (x + 18)^2$ (2nd: $(b/2)^2$; 1st: b/2)

$x^2 - 4x + 4 = (x - 2)^2$ (2nd: $(b/2)^2$; 1st: b/2)

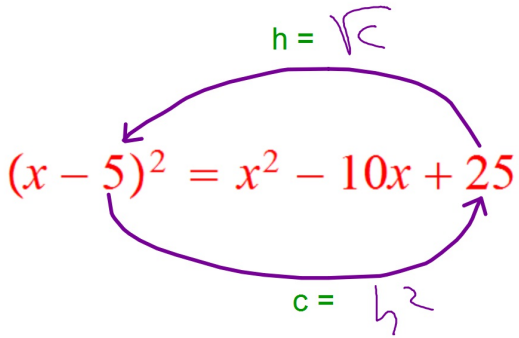
$(x + h)^2 = x^2 + bx + c$

Relationships between b and c



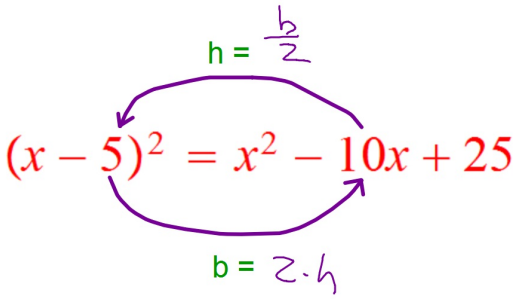
$(x + h)^2 = x^2 + bx + c$

Relationships between h and c



$(x + h)^2 = x^2 + bx + c$

Relationships between h and b



Sec 5-7

Fill in the blanks

1. $x^2 + 20x + \underline{100} = (x + \underline{10})^2$

2nd: $(b/2)^2$ → 100; 1st: b/2 → 10

2. $x^2 - 4x + \underline{+4} = (x \underline{-2})^2$

2nd: $(b/2)^2$ → +4; 1st: b/2 → −2

This is called "Completing the Square."

The constant in the trinomial is half of b, squared: $(b/2)^2$

$(x-5)^2 = x^2 - 10x + 25$

$ax^2 + bx + c$

The constant in the parentheses is half of b: b/2

In general, to complete the square:

$x^2 + 16x + 64 = (x + 8)^2$

$x^2 + bx + \left(\frac{b}{2}\right)^2 = (x + \frac{b}{2})^2$

2nd → $\left(\frac{b}{2}\right)^2$; 1st → $\frac{b}{2}$

Complete the square for each.

1. $x^2 - 2x + \underline{+1} = (x \underline{-1})^2$

2nd: $(b/2)^2$ → +1; 1st: b/2 → −1

2. $x^2 + 50x + \underline{+625} = (x \underline{+25})^2$

2nd: $(b/2)^2$ → +625; 1st: b/2 → +25

3. $x^2 - 3x + \underline{\frac{9}{4}} = (x \underline{-\frac{3}{2}})^2$

2nd: $(b/2)^2$ → $\frac{9}{4}$; 1st: b/2 → $-\frac{3}{2}$

Expand. $(2x + 5)^2$

$4x^2 + 20x + 25$

Find the value of k so that the trinomial will factor into $(x - h)^2$.
Give the value of h also.
This is called a perfect square trinomial.

$9x^2 - kx + 49 = (ax - h)^2$

$-42x$ $(3x-7)^2$

You can now finish Hwk #19. Sec 5-7

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Problems 7-12, 42, 43, 46, 47