Factoring Perfect Square Trinomials

Remember a perfect square is a product of a number multiplied by itself. For example, 25 is a perfect square because 5(5) = 25. We will use the same steps to factor these trinomials.

What both signs are   The same sign

$$x^2 + bx + c$$

Add to get the number   Multiply to get the number

Example 1: $x^2 + 14x + 49$ *49 is a perfect square; we have both positive signs

            $(x + 7)(x + 7)$ *7 is the square root of 49 and 7 + 7 = 14

            $(x + 7)^2$ *because we have two of the same thing, we square it

Example 2: $x^2 + 30x + 225$ *225 is a perfect square; we have both positive signs

            $(x + 15)(x + 15)$ *15 is the square root of 225 and 15+ 15 = 30

            $(x + 15)^2$ *because we have two of the same thing, we square it

Example 3: $x^2 - 12x + 36$ *36 is a perfect square; we have both negative signs

            $(x - 6)(x - 6)$ *6 is the square root of 36 and 6 + 6 = 12

            $(x - 6)^2$ *because we have two of the same thing, we square it

Example 4: $x^2 - 26x + 169$ *169 is a perfect square; we have both negative signs

            $(x - 13)(x - 13)$ *13 is the square root of 169 and 13+ 13 = 26

            $(x - 13)^2$ *because we have two of the same thing, we square it

Example 5: $25x^2 + 20x + 4$ *25 and 4 are both perfect squares; we have both positives

            $(5x + 2)(5x + 2)$ *5 is the square root of 25 and 2 is the square root of 4

            $(5x + 2)^2$ *because we have two of the same thing, we square it