That is, if $(x+3)(x+5)=0$, either $x+3=0$, or $x+5=0$ or both equal zero. In order that the factor $x+3$ be equal zero, x must have a value of -3. Similarly, $(x+5)$ will be zero if $x=-5$. Thus, both the values $x=-3$ and $x=-5$ satisfy the equation, $x^2+8x+15=0$, wich is gotten by multiplying $(x+3)$ by $(x+5)$. — P29

If $x=-3$, we have:

$(-3)^2+8(-3)+15=0$

$9+(-24)+15=0$

If $x=-5$, we have:

$(-5)^2+8(-5)+15=0$

$25+(-40)+15=0$

Factoring is thus seen to be an important approach to the solution of quadratic equations.

Further Illustrations:

(1) What values of x satisfy the equation $x^2=9$?

Solution: $x^2-9=0$ Rewrite the equation

$(x+3)(x-3)=0$ Factor left side

~~Since both factors are the same, set one of them to zero and solve for x: $x+3=0$, $x=-3$~~

Set each factor to zero and solve for x:

$x+3=0$, so $x=-3$; $x-3=0$; so $x=+3$. Cheking: $(-3)^2=9$ and $(3)^2=9$.

(2) What values of x satisfy the equation: $x^2+6x+9=0$?

Solution: Factor left side: ~~after setting~~ $(x+3)(x+3)=0$. Since both factors are the same, set one of them to zero and solve for x: $x+3=0$, $x=-3$. Since $x=-3$, and only -3, there is only one value of x that satisfies the given equation, but this value is thought of as being a repeated root.

The factoring method is faster than the trial method. Unfortunately it does not always work so easily.

29. Solution of quadratic root by completing the square

Now we shall examine some of the equations already solved in order to devise a method to solve quadratics that are not factorable.

If $x^2=9$, take the square root of both sides. Then ~~$x=\pm 3$~~ $x=\pm 3$, where $\pm$ means $+$ or $-$. If $x^2+6x+9=0$, we can put it into the form $(x+3)^2=0$,

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