

# QUADRATIC EQUATIONS II

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## 1. Small vocabulary

Absolute - absolutní

Quadratic equation – kvadratická rovnice

Equation – rovnice

Root – kořen

Factor out – vytknout

Term – člen

Polynom – mnohočlen

Variable – proměnná

## 2. Quadratic equation without an absolute term

A quadratic equation is the second-order polynomial equation with in a single variable  $x$ .

$$ax^2 + bx + c = 0$$

Numbers  $a$ ,  $b$  and  $c$  are the coefficients of quadratic equation and the coefficient  $a$  must be different from 0. If the coefficient  $a$  is 0, it will be a linear equation.

If the coefficient  $c$  is 0, we will have the quadratic equation without an absolute term.

$$ax^2 + bx = 0$$

## 3. How to solve a quadratic equation without absolute term?

We have to factor out the  $x$  variable from the equation. We will obtain the product of variable  $x$  and a linear equation  $ax + b = 0$ .

One root will be  $x = 0$  and the other root will be the root of the linear equation  $ax + b = 0$

$$ax^2 + bx = 0$$

$$x \cdot (ax + b) = 0$$

$$x = 0 \quad \text{or} \quad ax + b = 0$$

## 4. Example

$$x^2 + 5x = 0$$

$$x \cdot (x + 5) = 0$$

$$x = 0 \quad \text{or} \quad x + 5 = 0$$

$$x_1 = 0 \quad x_2 = -5$$

## 5. Exercises

a)  $3x^2 + 5x = 0$

c)  $x^2 - 7x = 0$

e)  $15x^2 - 8x = 0$

b)  $5x^2 + 2x = 0$

d)  $x^2 + 4x = 0$

f)  $-3x^2 + 2x = 0$

