**CBSE Class–10 Mathematics  
Revision Notes  
CHAPTER 04  
QUADRATIC EQUATIONS**

1. Quadratic Equations

2. Solution by Factorisation

3. Solution by Completing the Square

4. Nature of Roots

**1.** The equation https://elpiscart.com/cgi-bin/mathtex.cgi?a%7bx%5e2%7d%20+%20bx%20+%20c , https://elpiscart.com/cgi-bin/mathtex.cgi?a%20\ne%200  is the standard form of a quadratic equation, where a, b and c are real numbers.

https://elpiscart.com/cgi-bin/mathtex.cgi?a%7bx%5e2%7d%20+%20bx%20+%20c%20=%200,a%20\ne%200 is known as **Standard form**or **General form**of a quadratic equation.

In other words, we can say that an equation of order (degree) 2 is called a **quadratic equation**.

**2.** A real number https://elpiscart.com/cgi-bin/mathtex.cgi?\alpha  is said to be a root of the quadratic equation https://elpiscart.com/cgi-bin/mathtex.cgi?a%7bx%5e2%7d%20+%20bx%20+%20c%20=%200,a%20\ne%200 , https://elpiscart.com/cgi-bin/mathtex.cgi?%7b%20a%20%7d%20\ne%200. If https://elpiscart.com/cgi-bin/mathtex.cgi?a%7b\alpha%20%5e2%7d%20+%20b\alpha%20+%20c%20=%200, the zeroes of quadratic polynomial https://elpiscart.com/cgi-bin/mathtex.cgi?%7b\text%7ba%7d%7d%7b%7b\text%7bx%7d%7d%5e2%7d%7b\text%7b%20%7d%7d%20+%20%7b\text%7b%20bx%20%7d%7d%20+%20%7b\text%7b%20c%20%7d%7d and the roots of the the quadratic equation https://elpiscart.com/cgi-bin/mathtex.cgi?%7b\text%7ba%7d%7d%7b%7b\text%7bx%7d%7d%5e2%7d%7b\text%7b%20%7d%7d%20+%20%7b\text%7b%20bx%20%7d%7d%20+%20%7b\text%7b%20c%20%7d%7d%20=%20%7b\text%7b%20%7d%7d0 are the same.

**3.** If we can factorise  into product of two linear factors,then the roots of the quadratic equation can be found by equating each factors to zero.

**4.** The roots of a quadratic equation https://elpiscart.com/cgi-bin/mathtex.cgi?%7b\text%7ba%7d%7d%7b%7b\text%7bx%7d%7d%5e2%7d%7b\text%7b%20%7d%7d%20+%20%7b\text%7b%20bx%20%7d%7d%20+%20%7b\text%7b%20c%20%7d%7d%20=%20%7b\text%7b%20%7d%7d0, https://elpiscart.com/cgi-bin/mathtex.cgi?%7b%20a%20%7d%20\ne%200 are given by https://elpiscart.com/cgi-bin/mathtex.cgi?\frac%7b%7b%20-%20b%20\pm%20\sqrt%20%7b%7bb%5e2%7d%20-%204ac%7d%20%7d%7d%7b%7b2a%7d%7d,provided that https://elpiscart.com/cgi-bin/mathtex.cgi?%7b%7b\text%7bb%7d%7d%5e2%7d-%7b\text%7b%204ac%7d%7d%20\geqslant%20%7b\text%7b%20%7d%7d0. It is called **Quadratic formula**.

**5.** A quadratic equation https://elpiscart.com/cgi-bin/mathtex.cgi?%7b\text%7ba%7d%7d%7b%7b\text%7bx%7d%7d%5e2%7d%7b\text%7b%20%7d%7d%20+%20%7b\text%7b%20bx%20%7d%7d%20+%20%7b\text%7b%20c%20%7d%7d%20=%20%7b\text%7b%20%7d%7d0, https://elpiscart.com/cgi-bin/mathtex.cgi?%7b%20a%20%7d%20\ne%200 has :

(a) Two distinct and real roots, if https://elpiscart.com/cgi-bin/mathtex.cgi?%7bb%5e2%7d%20-%204ac\;%20&gt;%20\;0.

(b) Two equal and real roots, if https://elpiscart.com/cgi-bin/mathtex.cgi?%7bb%5e2%7d%20-%204ac\;%20=%20\;0.

(c) Two roots are not real, if https://elpiscart.com/cgi-bin/mathtex.cgi?%7bb%5e2%7d%20-%204ac\;%20&lt;%20\;0.

**6.** A quadratic equation can also be solved by the method of completing the square.

(i)

(ii)

**7.** Discriminant of the quadratic equation https://elpiscart.com/cgi-bin/mathtex.cgi?%7b\text%7ba%7d%7d%7b%7b\text%7bx%7d%7d%5e2%7d%7b\text%7b%20%7d%7d%20+%20%7b\text%7b%20bx%20%7d%7d%20+%20%7b\text%7b%20c%20%7d%7d%20=%20%7b\text%7b%20%7d%7d0, https://elpiscart.com/cgi-bin/mathtex.cgi?%7b%20a%20%7d%20\ne%200 is given by https://elpiscart.com/cgi-bin/mathtex.cgi?D%20=%20%7bb%5e2%7d%20-%204ac.