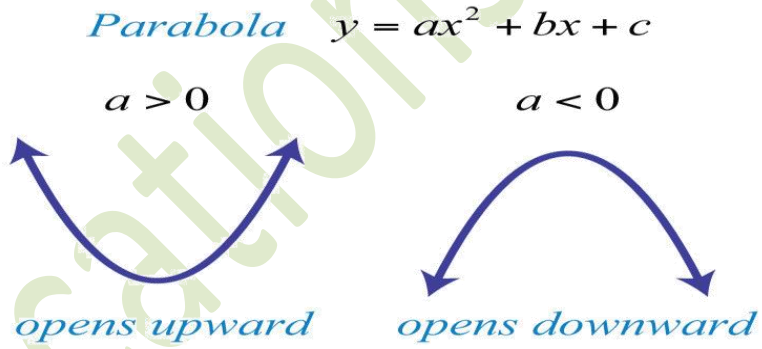
Formula
Chapter: - 4
QUADRATIC EQUATIONS

1. **Quadratic polynomial:** - $ax^2 + bx + c, a \neq 0$

   Three forms of quadratic Equations: -
   a) **Standard:** $y = ax^2 + bx + c$
   b) **Factored:** $y = a(x-m)(x-n)$
   c) **Vertex:** $y = a(x-h)^2 + k$

2. **Quadratic Equations Forms Parabola:**
   General equation of Parabola**: -** $y = a(x-h)^2 + k$
   a) **Upward If 'a' is positive**
   b) **Downward if 'a' is negative**



3. **Discriminant: -** $b^2 - 4ac$
   $b^2 - 4ac$ determines whether the quadratic equation $ax^2 + bx + c = 0$ has real roots or not.
   (a) Two distinct real roots, if $b^2 - 4ac > 0$
   (b) Two equal real roots, if $b^2 - 4ac = 0$
   (c) No real roots, if $b^2 - 4ac < 0$

4. **Quadratic formula:** The roots of a quadratic equation $ax^2 + bx + c = 0$ are given by $\frac{-b \pm \sqrt{b^2-4ac}}{2a}$ provided **$b^2 - 4ac \geq 0$.**