**4.7 The Quadratic Formula**

Quadratic Formula: another method used to solve ANY quadratic equation (ax2 + bx + c = 0)

**The Quadratic Formula**;

*The solutions of the quadratic equation ax2 + bx + c = 0 are:*

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* Can be used for any quadratic equation
* Quadratic equation must be in standard form; ax2 + bx + c = 0

*Examples:*

*Use the quadratic formula to solve the equations*

x2 – 4x + 3 = 0 x2 + x – 1 = 0

2x2 + 3x + 5 = 0 9x2 + 6x – 1 = 0

-x2 + 8x = 1 5x2 – 2x + 37 = x2 + 2x

**Discriminant**: the expression **b2 – 4ac** under the radical sign in the Quadratic Formula

* Tells you the **number** and **types** of solutions

**Number and Type of Solutions of a Quadratic Equation**;

*Consider the quadratic equation ax2 + bx + c = 0;*

|  |  |
| --- | --- |
| **Discriminant** | **Solutions** |
| b2 – 4ac = POSITIVE | 2 REAL solutions |
| b2 – 4ac = 0 | 1 REAL solution |
| b2 – 4ac = NEGATIVE | No Real Solution  (2 IMAGINARY solutions) |

*Examples:*

*Find the discriminant of the quadratic equation and give the number and type of solutions of the equation.*

a) 2x2 + x = 5

b) x2 – x = 5x – 9

c) –x2 + 2x = 2

**HMWK: pg 244 #1-7, 15-21(odd), 38**