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Quadratic Equation Formulas

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List of 17 Quadratic Equation Formulas

Quadratic Equation ↗

1) Difference of Roots of Quadratic Equation ↗

fx $D'_{(x_1-x_2)} = \frac{\sqrt{D}}{a}$

[Open Calculator ↗](#)

ex $10 = \frac{\sqrt{400}}{2}$

2) Discriminant of Quadratic Equation ↗

fx $D = (b^2) - (4 \cdot a \cdot c)$

[Open Calculator ↗](#)

ex $400 = ((8)^2) - (4 \cdot 2 \cdot -42)$

3) First Root of Quadratic Equation ↗

fx $x_1 = \frac{-(b) + \sqrt{b^2 - 4 \cdot a \cdot c}}{2 \cdot a}$

[Open Calculator ↗](#)

ex $3 = \frac{-(8) + \sqrt{(8)^2 - 4 \cdot 2 \cdot -42}}{2 \cdot 2}$



4) First Root of Quadratic Equation given Discriminant ↗

$$fx \quad x_1 = \frac{-b + \sqrt{D}}{2 \cdot a}$$

[Open Calculator ↗](#)

$$ex \quad 3 = \frac{-8 + \sqrt{400}}{2 \cdot 2}$$

5) Maximum or Minimum Value of Quadratic Equation ↗

$$fx \quad f_{(x)\text{Max/Min}} = \frac{(4 \cdot a \cdot c) - (b^2)}{4 \cdot a}$$

[Open Calculator ↗](#)

$$ex \quad -50 = \frac{(4 \cdot 2 \cdot -42) - ((8)^2)}{4 \cdot 2}$$

6) Maximum or Minimum Value of Quadratic Equation using Discriminant

$$fx \quad f_{(x)\text{Max/Min}} = -\frac{D}{4 \cdot a}$$

[Open Calculator ↗](#)

$$ex \quad -50 = -\frac{400}{4 \cdot 2}$$



7) Numerical Coefficient 'a' of Quadratic Equation ↗

fx $a = \frac{b^2 - D}{4 \cdot c}$

[Open Calculator ↗](#)

ex $2 = \frac{(8)^2 - 400}{4 \cdot -42}$

8) Numerical Coefficient 'b' of Quadratic Equation ↗

fx $b = \sqrt{D + (4 \cdot a \cdot c)}$

[Open Calculator ↗](#)

ex $8 = \sqrt{400 + (4 \cdot 2 \cdot -42)}$

9) Numerical Coefficient 'c' of Quadratic Equation ↗

fx $c = \frac{b^2 - D}{4 \cdot a}$

[Open Calculator ↗](#)

ex $-42 = \frac{(8)^2 - 400}{4 \cdot 2}$

10) Product of Roots of Quadratic Equation ↗

fx $P_{(x_1 \times x_2)} = \frac{c}{a}$

[Open Calculator ↗](#)

ex $-21 = \frac{-42}{2}$



11) Product of Roots of Quadratic Equation given Roots 

fx $P_{(x_1 \times x_2)} = x_1 \cdot x_2$

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\)](#)

ex $-21 = 3 \cdot -7$

12) Second Root of Quadratic Equation 

fx $x_2 = \frac{-(b) - \sqrt{b^2 - 4 \cdot a \cdot c}}{2 \cdot a}$

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\)](#)

ex $-7 = \frac{-(8) - \sqrt{(8)^2 - 4 \cdot 2 \cdot -42}}{2 \cdot 2}$

13) Second Root of Quadratic Equation given Discriminant 

fx $x_2 = \frac{-b - \sqrt{D}}{2 \cdot a}$

[Open Calculator !\[\]\(bd3b31712ad9bab5a241210fa6925cdd_img.jpg\)](#)

ex $-7 = \frac{-8 - \sqrt{400}}{2 \cdot 2}$

14) Sum of Roots of Quadratic Equation 

fx $S_{(x_1+x_2)} = -\frac{b}{a}$

[Open Calculator !\[\]\(7bc43b319a082987e20f7bf78f4bab80_img.jpg\)](#)

ex $-4 = -\frac{8}{2}$



15) Sum of Roots of Quadratic Equation given Roots ↗

fx $S_{(x_1+x_2)} = (x_1) + (x_2)$

Open Calculator ↗

ex $-4 = (3) + (-7)$

16) Value of Quadratic Equation ↗

fx $f_{(x)} = (a \cdot x^2) + (b \cdot x) + (c)$

Open Calculator ↗

ex $48 = (2 \cdot (5)^2) + (8 \cdot 5) + (-42)$

17) Value of X for Maximum or Minimum Value of Quadratic Equation ↗

fx $x_{\text{Max/Min}} = -\frac{b}{2 \cdot a}$

Open Calculator ↗

ex $-2 = -\frac{8}{2 \cdot 2}$



Variables Used

- **a** Numerical Coefficient a of Quadratic Equation
- **b** Numerical Coefficient b of Quadratic Equation
- **c** Numerical Coefficient c of Quadratic Equation
- **D** Discriminant of Quadratic Equation
- **D'**($x_1 - x_2$) Difference of Roots of Quadratic Equation
- **f(x)** Value of Quadratic Equation
- **f(x)Max/Min** Maximum/Minimum Value of Quadratic Equation
- **P**($x_1 \times x_2$) Product of Roots
- **S**($x_1 + x_2$) Sum of Roots
- **x** Value of X of Quadratic Equation
- **x₁** First Root of Quadratic Equation
- **x₂** Second Root of Quadratic Equation
- **x_{Max/Min}** Value of X for Maximum/Minimum Value of f(X)



Constants, Functions, Measurements used

- **Function:** **sqrt**, sqrt(Number)

A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.



Check other formula lists

- [Quadratic Equation Formulas](#) ↗

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