4 Methods to Solve Quadratic Equations

* **Factoring** - quick method, no calculator needed
* **Graphing** - easily done on calculator
* **Completing the square** - Math III
* **Quadratic formula** - memorize

4 Names for "solution"

* **solution** (solve)
* **root** (find root of quadratic)
* **zero** (use "zero" command in calculator)
* **x-intercept** (visually see solution)

Solving Quadratic Equations by Factoring

1) Write quadratic equation so that it equals "0".

$$x^2 - 6x + 8 = 0$$

2) Factor quadratic expression.

$$(x - 2)(x - 4) = 0$$

3) Since multplying factors = 0, both factors = 0 also.

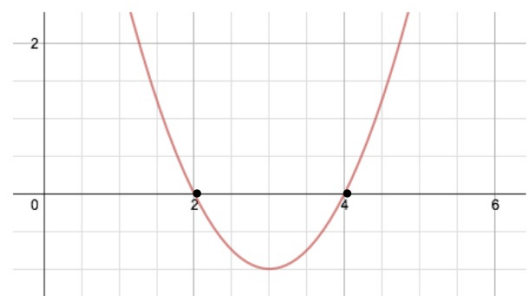$$(x - 2) = 0$$
$$(x - 4) = 0$$

4) Solve for x.

$$x = 2$$
$$x = 4$$

Solving Quadratic Equations by Graphing

1) Write quadratic equation so that it equals "0".

$x^2 - 6x + 8 = 0$

2) Substitute "0" for y, and type equation into calculator at "y=" screen.

$y_1 = x^2 - 6x + 8$

3) Graph equation to SEE x-intercept (x-intercept is solution).

4) Using "trace" command, verify solution by evaluating your guess to get "0".

$x = 2$
$x = 4$

Using the Graphing Calculator to Find Solutions/Zeros/Roots/X-intercepts

STEPS:

1) Graph the equation so that you can **SEE** both solutions.

2) Press **2ND**, **CALC**, and **2** (the **zero** command).

3) For **Left Bound?**, move cursor **LEFT** of the zero you are locating, and press **ENTER**. (Calculator will mark your spot.)

4) For **Right Bound?**, move cursor **RIGHT** of the zero you are locating, and press **ENTER**. (Calculator will mark your spot.)

5) For **Guess?**, press **ENTER**. X = the found zero.

6) Repeat for 2nd zero.

NOTE: When marking left and right, do not mark left or right of **BOTH** zeros at the same time.

Solving Quadratic Equations Practice

17. $x^2 - 6x + 8 = 0$

18. $b^2 - 7b + 12 = 0$

19. $m^2 + 5m + 6 = 0$

20. $d^2 + 7d + 10 = 0$

21. $y^2 - 2y - 24 = 0$

22. $p^2 - 3p = 18$

23. $h^2 + 2h = 35$

24. $a^2 + 14a = -45$

25. $n^2 - 36 = 5n$

26. $w^2 + 30 = 11w$

More Practice Solving Quadratic Equations

15. $2x^2 + 7x + 3 = 0$

16. $3w^2 + 14w + 8 = 0$

17. $3n^2 - 7n + 2 = 0$

18. $5d^2 - 22d + 8 = 0$

19. $6h^2 + 8h + 2 = 0$

20. $8p^2 - 16p = 10$

21. $9y^2 + 18y - 12 = 6y$

22. $4a^2 - 16a = -15$

23. $10b^2 - 15b = 8b - 12$

24. $6d^2 + 21d = 10d + 35$