

**Find the zeros using the quadratic formula.**

1.  $g(x) = 2x^2 + 4x - 12$

2.  $f(x) = x^2 + 10x + 29$

3.  $h(x) = 3x^2 - 3x + \frac{3}{4}$

4.  $f(x) = 7x^2 - 2x - 9$

5.  $g(x) = 9x^2 + 12x + 5$

6.  $h(x) = 2x^2 - 6x + 7$

7.  $f(x) = x^2 + 2\sqrt{3}x - 3$

**Find the number and type of solutions for each equation. Do not solve.**

8.  $2x^2 - 12x + 18 = 0$

9.  $3x^2 = 7 - 4x$

10.  $2x^2 + 5 = -3x$

11. Solve by completing the square:  $9x^2 - 12x + 14 = 0$

12. Use completing the square to rewrite in vertex form:  $y = -3x^2 - 18x - 24$ .  
What is the vertex?

13. The vertex of a parabola is (2, 18) and a point on the parabola is (4, 10). Write the equation of the parabola in:

a) vertex form

b) standard form

c) intercept form

14. Determine  $A$  and  $B$  so that the graph of the parabola  $y = Ax^2 + Bx$  will contain the points (2, 2) and (-3, -18).

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**Solve each inequality using algebra.**

1.  $x^2 + 7x - 18 \geq 0$
2.  $x^2 + 2x - 60 > 3$
3.  $2x^2 + 13x + 10 \geq 4$
4.  $5x^2 - 36x - 32 < 0$
5.  $4x^2 < 64$
6.  $4x(x+1) \leq 3$
7.  $\frac{x^2-4}{6} - \frac{2x-3}{4} \leq \frac{1}{12}$
8.  $x^3 - 4x^2 + 3x > 0$
9. Solve by quadratic formula:  $40x - 7x^2 = 101 - 3x^2$
10. Find the number and type of solutions:  $2x^2 - 5x + \sqrt{8} = 0$
11. Use the discriminant to find the value of  $k$  so that  $kx^2 - 4x + 8 = 0$  will have 1 real solution.
12. Determine the  $x$ -intercepts and  $y$ -intercept of the graph of  $f(x) = 2x^2 - 9x - 5$ .

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