

**Homework** 1.11 Solving Quadratics Part 3

Answer the following questions about solving quadratics.

1. What are the solving methods to solve for quadratic equations? Fill in the methods in the diagram below.

<u>2 Terms (Binomials)</u>	<u>3 Terms (Trinomials)</u>
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
	4. _____

2. In order to solve for x by using the complete the square method, you must \_\_\_\_\_.

3. In order to solve for x by using the quadratic formula method, you must \_\_\_\_\_.

4. How do we determine how many solutions a quadratic equation has? \_\_\_\_\_.

Determine the number of roots each quadratic will have.

5.  $-5a^2 + 10a - 6$

6.  $-3n^2 + 11n - 10 = 0$

7.  $8x^2 + 6x - 12 = 0$

8.  $-v^2 + 4v + 5 = 9$

9.  $5x^2 - 10x + 18 = 13$

10.  $-4x^2 + x - 15 = -13$

Solve by completing the square method.

11.  $a^2 + 14a - 51 = 0$

12.  $x^2 - 12x + 11 = 0$

Answer the following questions about solving quadratics.

1. What are the solving methods to solve for quadratic equations? Fill in the methods in the diagram below.

<u>2 Terms (Binomials)</u>	<u>3 Terms (Trinomials)</u>
1. <u>GCF Factoring</u>	1. <u>GCF Factoring</u>
2. <u>Difference of Squares</u>	2. <u>Factoring Trinomials</u>
3. <u>Taking Square Root</u>	3. <u>Completing the Square</u>
	4. <u>Quadratic Formula</u>

2. In order to solve for x by using the complete the square method, you must isolate the constant term.

3. In order to solve for x by using the quadratic formula method, you must set the equation equal to 0.

4. How do we determine how many solutions a quadratic equation has? Use the discriminant;  $b^2 - 4ac$ .

Determine the number of roots each quadratic will have.

5.  $-5a^2 + 10a - 6$

1 real solution

6.  $-3n^2 + 11n - 10 = 0$

2 real solutions

7.  $8x^2 + 6x - 12 = 0$

No real solutions, but 2 imaginary solutions

8.  $-v^2 + 4v + 5 = 9$

1 real solution

9.  $5x^2 - 10x + 18 = 13$

1 real solution

10.  $-4x^2 + x - 15 = -13$

No real solutions, but 2 imaginary solutions

Solve by completing the square method.

11.  $a^2 + 14a - 51 = 0$

$$a = 3,$$

$$a = -17$$

12.  $x^2 - 12x + 11 = 0$

$$x = 11$$

$$x = 1$$

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13.  $x^2 + 14x = 15$

14.  $k^2 + 23 = 12k$

15.  $k^2 - 4k + 1 = -5$

16.  $b^2 + 2b = -20$

*Solve by using the quadratic formula method.*

17.  $9x^2 + 9x + 10 = 0$

18.  $6x^2 + 4x - 20 = 0$

19.  $11r^2 - 8r + 14 = 4$

20.  $7x^2 - 4x + 20 = 8$

21.  $3n^2 = -n - 10$

22.  $11b^2 - 16 = -8b$

13.  $x^2 + 14x = 15$

$$x = 1$$

$$x = -15$$

14.  $k^2 + 23 = 12k$

$$k = 6 + \sqrt{13}$$

$$k = 6 - \sqrt{13}$$

15.  $k^2 - 4k + 1 = -5$

$$k = 2 + i\sqrt{2}$$

$$k = 2 - i\sqrt{2}$$

16.  $b^2 + 2b = -20$

$$b = -1 + i\sqrt{19}$$

$$b = -1 - i\sqrt{19}$$

*Solve by using the quadratic formula method.*

17.  $9x^2 + 9x + 10 = 0$

$$x = -\frac{3}{6} + \frac{i\sqrt{31}}{6},$$

$$x = -\frac{3}{6} + \frac{i\sqrt{31}}{6}$$

18.  $6x^2 + 4x - 20 = 0$

$$x = -\frac{1}{3} + \frac{\sqrt{31}}{3},$$

$$x = -\frac{1}{3} - \frac{\sqrt{31}}{3}$$

19.  $11r^2 - 8r + 14 = 4$

$$r = \frac{4}{11} - \frac{i\sqrt{94}}{11},$$

20.  $7x^2 - 4x + 20 = 8$

$$x = \frac{2}{7} - \frac{4i\sqrt{5}}{7}$$

$$x = \frac{2}{7} + \frac{4i\sqrt{5}}{7}$$

21.  $3n^2 = -n - 10$

$$n = -\frac{1}{6} - \frac{i\sqrt{119}}{6}$$

$$= -\frac{1}{6} + \frac{i\sqrt{119}}{6}$$

22.  $11b^2 - 16 = -8b$

$$b = -\frac{4}{11} - \frac{8\sqrt{3}}{11}$$

$$b = -\frac{4}{11} + \frac{8\sqrt{3}}{11}$$