

**Practice by Example**

**Example 1**  
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Solve each equation.  
1.  $x^2 + 6x + 9 = 1$   $\begin{matrix} -4, -2 \\ -4, -2 \end{matrix}$

4.  $x^2 + 8x + 16 = \frac{16}{9}$   $\begin{matrix} -\frac{16}{3}, -\frac{8}{3} \\ -\frac{16}{3}, -\frac{8}{3} \end{matrix}$

**Example 2**  
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Complete the square.

7.  $x^2 + 18x + \blacksquare = 81$

10.  $x^2 + 20x + \blacksquare = 100$

8.  $x^2 - x + \blacksquare = \frac{1}{4}$

11.  $m^2 - 3m + \blacksquare = \frac{9}{4}$

9.  $x^2 - 24x + \blacksquare = 144$

12.  $x^2 + 4x + \blacksquare = 4$

**Examples 3 and 4**  
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13.  $x^2 - 3x = 28$

14.  $x^2 - 3x = 4$

15.  $x^2 + 6x + 41 = 0$

13–27. See margin.

16.  $x^2 - 2x = -2$

17.  $w^2 - 8w - 9 = 0$

18.  $x^2 + 6x = -22$

**Example 5**  
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19.  $x^2 + 4 = 0$

20.  $-x^2 - 2x = 5$

21.  $6x - 3x^2 = -12$

22.  $2p^2 = 6p - 20$

23.  $3x^2 - 12x + 7 = 0$

24.  $4c^2 + 10c = -7$

25.  $2x^2 + x - 28 = 0$

26.  $9x^2 - 12x + 5 = 0$

27.  $4x^2 + 4x = 3$

**Example 6**  
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Rewrite each equation in vertex form. 28–33. See margin.

28.  $y = x^2 + 4x - 7$

29.  $y = -x^2 + 4x - 1$

30.  $y = -2x^2 + 6x + 1$

31.  $y = x^2 + 4x + 1$

32.  $y = 2x^2 - 8x + 1$

33.  $y = -x^2 - 2x + 3$

Lesson 5-7 Completing the Square **281**

16.  $1 \pm i$

20.  $-1 \pm 2i$

24.  $-\frac{5}{4} \pm \frac{i\sqrt{3}}{4}$

17.  $-1, 9$

21.  $1 \pm \sqrt{5}$

25.  $-4, \frac{7}{2}$

18.  $-3 \pm i\sqrt{13}$

22.  $\frac{3}{2} \pm \frac{i\sqrt{31}}{2}$

26.  $\frac{2}{3} \pm \frac{1}{3}i$

19.  $\pm 2i$

23.  $2 \pm \frac{\sqrt{15}}{3}$

27.  $-\frac{3}{2}, \frac{1}{2}$

**Enrichment 5-7**

**Retaching 5-7**

**Practice 5-7**

**Practice 5-7** Completing the Square

Complete the square.

1. $x^2 + 6x + 9 = 1$	2. $x^2 + 10x + 25 = 1$	3. $x^2 + 12x + 36 = 1$	4. $x^2 + 14x + 49 = 1$
5. $x^2 + 8x + 16 = 1$	6. $x^2 + 10x + 25 = 1$	7. $x^2 + 12x + 36 = 1$	8. $x^2 + 14x + 49 = 1$

Write each equation in vertex form. Then find the vertex.

9. $y = x^2 + 6x + 9$	10. $y = x^2 + 10x + 25$	11. $y = x^2 + 12x + 36$	12. $y = x^2 + 14x + 49$
13. $y = x^2 + 8x + 16$	14. $y = x^2 + 10x + 25$	15. $y = x^2 + 12x + 36$	16. $y = x^2 + 14x + 49$
17. $y = x^2 + 6x + 9$	18. $y = x^2 + 10x + 25$	19. $y = x^2 + 12x + 36$	20. $y = x^2 + 14x + 49$
21. $y = x^2 + 8x + 16$	22. $y = x^2 + 10x + 25$	23. $y = x^2 + 12x + 36$	24. $y = x^2 + 14x + 49$

Write each quadratic equation by completing the square.

25. $x^2 + 6x + 9 = 1$	26. $x^2 + 10x + 25 = 1$	27. $x^2 + 12x + 36 = 1$	28. $x^2 + 14x + 49 = 1$
31. $x^2 + 8x + 16 = 1$	32. $x^2 + 10x + 25 = 1$	33. $x^2 + 12x + 36 = 1$	34. $x^2 + 14x + 49 = 1$

**Write each equation.**

35. $x^2 + 6x + 9 = 1$	36. $x^2 + 10x + 25 = 1$	37. $x^2 + 12x + 36 = 1$	38. $x^2 + 14x + 49 = 1$
41. $x^2 + 8x + 16 = 1$	42. $x^2 + 10x + 25 = 1$	43. $x^2 + 12x + 36 = 1$	44. $x^2 + 14x + 49 = 1$

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28.  $y = (x + 2)^2 - 11$

29.  $y = -(x - 2)^2 + 3$

30.  $y = -2(x - \frac{3}{2})^2 + \frac{11}{2}$

31.  $y = (x + 2)^2 - 3$

32.  $y = 2(x - 2)^2 - 7$

33.  $y = -(x + 1)^2 + 4$