

Completing the Square

Rewrite each of the following in the form $y = a(x - h)^2 + k$ by completing the square.

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

2. $y = x^2 + 14x$

3. $y = x^2 + 20x$

4. $y = x^2 + 18x$

5. $y = x^2 - 6x$

6. $y = x^2 - 10x$

7. $y = x^2 - 2x$

8. $y = x^2 - 12x$

9. $y = x^2 + 4x + 8$

10. $y = x^2 - 8x + 9$

11. $y = x^2 + 14x - 3$

12. $y = x^2 + 6x + 2$

13. $y = x^2 - 16x + 50$

14. $y = x^2 + 8x + 4$

15. $y = x^2 - 2x + 2$

16. $y = x^2 - 12x + 12$

17. $y = x^2 - 26x - 21$

18. $y = x^2 + 10x - 12$

19. $y = x^2 + 20x - 23$

20. $y = x^2 + 24x + 24$

21. $y = 2x^2 + 8x + 13$

22. $y = -2x^2 + 12x - 3$

23. $y = 2x^2 + 20x + 15$

24. $y = 3x^2 + 12x + 25$

25. $y = -x^2 - 8x + 12$

26. $y = -x^2 + 4x + 3$

27. $y = 4x^2 + 40x + 5$

28. $y = -10x^2 + 20x + 5$

29. $y = 5x^2 - 20x + 12$

30. $y = -3x^2 - 36x + 4$

31. $y = 6x^2 + 36x + 31$

32. $y = -5x^2 - 10x + 2$

33. $y = -3x^2 + 12x + 4$

34. $y = 4x^2 + 24x + 13$

35. $y = -x^2 + 8x + 2$

36. $y = 2x^2 + 28x + 5$

37. $y = 15x^2 + 60x - 2$

38. $y = -4x^2 + 32x + 3$

39. $y = -x^2 - 4x - 5$

40. $y = -x^2 + 6x - 4$

Answers

1. $y = (x + 4)^2 - 16$

2. $y = (x + 7)^2 - 49$

3. $y = (x + 10)^2 - 100$

4. $y = (x + 9)^2 - 81$

5. $y = (x - 3)^2 - 9$

6. $y = (x - 5)^2 - 25$

7. $y = (x - 1)^2 - 1$

8. $y = (x - 6)^2 - 36$

9. $y = (x + 2)^2 + 4$

10. $y = (x - 4)^2 - 7$

11. $y = (x + 7)^2 - 52$

12. $y = (x + 3)^2 - 7$

13. $y = (x - 8)^2 - 14$

14. $y = (x + 4)^2 - 12$

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

16. $y = (x - 6)^2 - 24$

17. $y = (x - 13)^2 - 190$

18. $y = (x + 5)^2 - 37$

19. $y = (x + 10)^2 - 123$

20. $y = (x + 12)^2 - 120$

21. $y = 2(x + 2)^2 + 5$

22. $y = -2(x - 3)^2 + 15$

23. $y = 2(x + 5)^2 - 35$

24. $y = 3(x + 2)^2 + 13$

25. $y = -(x + 4)^2 + 28$

26. $y = -(x - 2)^2 + 7$

27. $y = 4(x + 5)^2 - 95$

28. $y = -10(x - 1)^2 + 15$

29. $y = 5(x - 2)^2 - 8$

30. $y = -3(x + 6)^2 + 112$

31. $y = 6(x + 3)^2 - 23$

32. $y = -5(x + 1)^2 + 7$

33. $y = -3(x - 2)^2 + 16$

34. $y = 4(x + 3)^2 - 23$

35. $y = -(x - 4)^2 + 18$

36. $y = 2(x + 7)^2 - 93$

37. $y = 15(x + 2)^2 - 62$

38. $y = -4(x - 4)^2 + 67$

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

40. $y = -(x - 3)^2 + 5$