Review of Factoring—Practice

Factor each of the following polynomials completely. That is, once you are finished factoring, none of the factors you obtain should be factorable. Also, note that the even-numbered problems are not necessarily similar to the odd-numbered problems that precede them in this problem set.

1. $x^2 - 81$

2. $x^2 - 18x + 81$

3. $x^2 + 2x - 15$

4. $15x^2 + 11x - 6$

5. $x^2 + 6x + 9$

6. $12x^2 - 11x + 2$

7. $y^2 - 10y + 25$

8. $21y^2 - 25y - 4$

9. $2a^3b + 6a^2b + 2ab$

10. $6a^2 - ab - 15b^2$

11. $x^2 + x + 1$

12. $2x^2 - 4x + 2$

13. $12a^2 - 75$

14. $18a^2 - 50$

15. $9x^2 - 12xy + 4y^2$

16. $x^3 - x^2$

17. $4x^3 + 16xy^2$

18. $16x^2 + 49y^2$

19. $2y^3 + 20y^2 + 50y$

20. $3y^2 - 9y - 30$

21. $a^6 + 4a^4b^2$

22. $5a^2 - 45b^2$

23. $xy + 3x + 4y + 12$

24. $xy + 7x + 6y + 42$

25. $x^4 - 16$

26. $x^4 - 81$

27. $xy - 5x + 2y - 10$

28. $xy - 7x + 3y - 21$

29. $5a^2 + 10ab + 5b^2$

30. $3a^3b^2 + 15a^2b^2 + 3ab^2$

31. $x^2 + 49$

32. $16 - x^4$

33. $3x^2 + 15xy + 18y^2$

34. $3x^2 + 27xy + 54y^2$

35. $2x^2 + 15x - 38$

36. $2x^2 + 7x - 85$

37. $100x^2 - 300x + 200$

38. $100x^2 - 400x + 300$

39. $x^2 - 64$

40. $9x^2 - 4$

41. $x^2 + 3x + ax + 3a$

42. $x^2 + 4x + bx + 4b$

43. $49a^7 - 9a^5$

44. $a^4 - 1$

45. $49x^2 + 9y^2$

46. $12x^4 - 62x^3 + 70x^2$

47. $25a^3 + 20a^2 + 3a$

48. $36a^4 - 100a^2$

49. $xa - xb + ay - by$

50. $xy - bx + ay - ab$

51. $48a^4b - 3a^2b$

52. $18a^4b^2 - 12a^3b^3 + 8a^2b^4$

53. $20x^4 - 45x^2$

54. $16x^3 + 16x^2 + 3x$

55. $3x^2 + 35xy - 82y^2$

56. $3x^2 + 37xy - 86y^2$

57. $16x^5 - 44x^4 + 30x^3$

58. $16x^2 + 16x - 1$

59. $2x^2 + 2ax + 3x + 3a$

60. $2x^2 + 2ax + 5x + 5a$

61. $y^4 - 1$

62. $25y^7 - 16y^5$

63. $12x^4y^2 + 36x^3y^3 + 27x^2y^4$

64. $16x^3y^2 - 4xy^2$

Answers:

1.	$(x + 9)(x – 9)$	**2.**	$(x – 9)^2$	**3.**	$(x + 5)(x – 3)$	**4.**	Prime
5.	$(x + 3)^2$	**6.**	$(4x – 1)(3x – 2)$	**7.**	$(y – 5)^2$	**8.**	$(7x + 1)(3y – 4)$
9.	$2ab(a^2 + 3a + 1)$	**10.**	$(2a + 3b)(3a – 5b)$	**11.**	Prime	**12.**	$2(x – 1)^2$
13.	$3(2a + 5)(2a – 5)$	**14.**	$2(3a + 5)(3a – 5)$	**15.**	$(3x – 2y)^2$	**16.**	$x^2(x – 1)$
17.	$4x(x^2 + 4y^2)$	**18.**	Prime	**19.**	$2y(y + 5)^2$	**20.**	$3(y – 5)(y + 2)$
21.	$a^4(a^2 + 4b^2)$	**22.**	$5(a + 3b)(a – 3b)$	**23.**	$(x + 4)(y + 3)$	**24.**	$(x + 6)(y + 7)$
25.	$(x^2 + 4)(x + 2)(x – 2)$	**26.**	$(x^2 + 9)(x + 3)(x – 3)$	**27.**	$(x + 2)(y – 5)$	**28.**	$(x + 3)(y – 7)$

29.	$5(a + b)^2$	**30.**	$3ab^2(a^2 + 5a + 1)$	**31.**	Prime
32.	$(4 + x^2) (2 + x) (2 – x)$	**33.**	$3(x + 2y)(x + 3y)$	**34.**	$3(x + 3y)(x + 6y)$
35.	$(2x + 19) (x – 2)$	**36.**	$(2x + 17)(x – 5)$	**37.**	$100(x – 2)(x – 1)$
38.	$100((x – 3) (x – 1)$	**39.**	$(x + 8)(x – 8)$	**40.**	$(3x + 2)(3x – 2)$
41.	$(x + 3) ((x + a)$	**42**	$(x + 4)(x + b)$	**43.**	$a^5(7a + 3)(7a – 3)$
44.	$(a^2 + 1) (a + 1) (a – 1)$	**45.**	Prime	**46.**	$2x^2(2x – 7)(3x – 5)$
47.	$a (5a + 1)(5a + 3)$	**48.**	$4a^2(3a + 5)(3a – 5)$	**49.**	$(x + y)(a – b)$
50.	$(x + a) (y – b)$	**51.**	$3a^2b(4a + 1)(4a – 1)$	**52.**	$2a^2b^2 (9a^2 – 6ab + 4b^2)$
53.	$5x^2(2x + 3) (2x – 3)$	**54.**	$x(4x + 1)(4x + 3)$	**55.**	$(3x + 41y)(x – 2y)$
56.	$(3x + 43y) (x – 2y)$	**57.**	$2x^3(2x – 3)(4x – 5)$	**58.**	Prime
59.	$(2x + 3)(x + a)$	**60.**	$(2x + 5)(x + a)$	**61.**	$(y^2 + 1)(y + 1)(y – 1)$
62.	$y^5 (5y + 4)(5y – 4)$	**63.**	$3x^2y^2 (2x + 3y)^2$	**64.**	$4xy^2(2x + 1)(2x – 1)$