

19. $9w^2 - 25c^2$

20. $144w^2 - 121a^2$

⟨2⟩ Factoring a Perfect Square Trinomial

Determine whether each polynomial is a difference of two squares, a perfect square trinomial, or neither of these.

See Example 2.

See the Strategy for Identifying Perfect Square Trinomials box on page 330.

21. $x^2 - 20x + 100$

22. $x^2 - 10x - 25$

23. $y^2 - 40$

24. $a^2 - 49$

25. $4y^2 + 12y + 9$

26. $9a^2 - 30a - 25$

27. $x^2 - 8x + 64$

28. $x^2 + 4x + 4$

29. $9y^2 - 25c^2$

30. $9x^2 + 4$

31. $9a^2 + 6ab + b^2$

32. $4x^2 - 4xy + y^2$

Factor each perfect square trinomial. See Example 3.

33. $x^2 + 2x + 1$

34. $y^2 + 4y + 4$

35. $a^2 + 6a + 9$

36. $w^2 + 10w + 25$

37. $x^2 + 12x + 36$

38. $y^2 + 14y + 49$

39. $a^2 - 4a + 4$

40. $b^2 - 6b + 9$

41. $4w^2 + 4w + 1$

42. $9m^2 + 6m + 1$

43. $16x^2 - 8x + 1$

44. $25y^2 - 10y + 1$

45. $4t^2 + 20t + 25$

46. $9y^2 - 12y + 4$

47. $9w^2 + 42w + 49$

48. $144x^2 + 24x + 1$

49. $n^2 + 2nt + t^2$

50. $x^2 - 2xy + y^2$

⟨3⟩ Factoring Completely

Factor each polynomial completely. See Example 4.

51. $5x^2 - 125$

52. $3y^2 - 27$

53. $-2x^2 + 18$

54. $-5y^2 + 20$

55. $a^3 - ab^2$

56. $x^2y - y$
VIDEO

57. $3x^2 + 6x + 3$

58. $12a^2 + 36a + 27$

59. $-5y^2 + 50y - 125$

60. $-2a^2 - 16a - 32$

61. $x^3 - 2x^2y + xy^2$

62. $x^3y + 2x^2y^2 + xy^3$
VIDEO

63. $-3x^2 + 3y^2$

64. $-8a^2 + 8b^2$



65. $2ax^2 - 98a$

66. $32x^2y - 2y^3$

67. $3ab^2 - 18ab + 27a$

68. $-2a^2b + 8ab - 8b$

69. $-4m^3 + 24m^2n - 36mn^2$

70. $10a^3 - 20a^2b + 10ab^2$

⟨4⟩ Factoring by Grouping

Use grouping to factor each polynomial completely.

See Example 5.

71. $bx + by + cx + cy$

72. $3x + 3z + ax + az$

73. $x^3 + x^2 - 4x - 4$

74. $x^3 + x^2 - x - 1$

75. $3a - 3b - xa + xb$

76. $ax - bx - 4a + 4b$

77. $a^3 + 3a^2 + a + 3$

78. $y^3 - 5y^2 + 8y - 40$



79. $xa + ay + 3y + 3x$

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

81. $abc - 3 + c - 3ab$

82. $xa + tb + ba + tx$

83. $x^2a - b + bx^2 - a$

84. $a^2m - b^2n + a^2n - b^2m$

85. $y^2 + y + by + b$

86. $ac + mc + aw^2 + mw^2$

Miscellaneous

Factor each polynomial completely.

87. $6a^3y + 24a^2y^2 + 24ay^3$

88. $8b^5c - 8b^4c^2 + 2b^3c^3$

89. $24a^3y - 6ay^3$