

Concept and Vocabulary Check:

1. The formula for factoring the difference of two squares $A^2 - B^2 =$
_____.
2. A formula for factoring a perfect square trinomial is $A^2 + 2AB + B^2 =$ _____.
3. A formula for factoring a perfect square trinomial is $A^2 - 2AB + B^2 =$ _____.
4. The formula for factoring the sum of two cubes is $A^3 + B^3 =$ _____.
5. The formula for factoring the difference of two cubes is $A^3 - B^3 =$
_____.

Practice Exercises:

In exercises 1 - 25, factor each difference of two squares.

1. $x^2 - 25$

19. $25x^2 - 16y^2$

3. $y^2 - 1$

21. $x^4 - y^{10}$

9. $1 - 49x^2$

25. $16x^4 - 81$

In exercises 29 - 41, factor completely or state that the polynomial is prime.

29. $2x^3 - 72x$

37. $3y^3 - 48y$

31. $x^2 + 36$

41. $-3x^2 + 75$

35. $18 - 2y^2$

In exercises 45 - 65, factor any perfect square trinomials or state that the polynomial is prime.

45. $x^2 + 2x + 1$

57. $x^2 - 10x + 100$

49. $x^2 - 2x + 1$

59. $x^2 + 14xy + 49y^2$

53. $4x^2 + 4x + 1$

63. $x^2 - 8xy + 64y^2$

55. $25y^2 - 10y + 1$

65. $16x^2 - 40xy + 25y^2$

In exercises 67 - 77, factor completely.

67. $12x^2 - 12x + 3$

75. $-5x^2 + 30x - 45$

71. $2y^2 - 4y + 2$

77. $-16y^3 - 16y^2 - 4y$

In exercises 79 - 95, factor using the formula for the sum or difference of two cubes.

79. $x^3 + 1$

87. $x^3y^3 - 64$

81. $x^3 - 27$

91. $54 - 16y^3$

83. $8y^3 - 1$

93. $64x^3 + 27y^3$

85. $27x^3 + 8$

95. $125x^3 - 64y^3$

In exercises 97 - 103, factor completely.

89. $25x^2 - \frac{4}{49}$

95. $(x + 1)^2 - 25$

Applications:

In exercise 109, **first copy the images from page 452 next to the correct problem.** Then find the formula for the area of the shaded region and express it in factored form.

109.

Writing in Mathematics:

113. Explain why $x^2 - 1$ is factorable but $x^2 + 1$ is not.