

## Chapter 9 Section 2: Special Quadratic Factorizations

### Problems

For each problem, factor the expressions using the formulas on the right, or state that they cannot be factored using the formulas.

Note: You should always factor out the greatest common factor from the entire expression before you apply any of these formulas.

$a^2 + 2ab + b^2 = (a + b)^2$
$a^2 - 2ab + b^2 = (a - b)^2$
$a^2 - b^2 = (a + b)(a - b)$
$a^2 + b^2 = \text{does not factor}$

1.  $x^2 - 4x + 4 =$  \_\_\_\_\_

2.  $x^2 - 10x + 25 =$  \_\_\_\_\_

3.  $x^2 + 6x + 9 =$  \_\_\_\_\_

4.  $x^2 + 24x + 144 =$  \_\_\_\_\_

5.  $a^2 + 4b^2 =$  \_\_\_\_\_

6.  $16a^2 + 9b^2 =$  \_\_\_\_\_

7.  $s^2 - 4t^2 =$  \_\_\_\_\_

8.  $9s^2 - 16t^2 =$  \_\_\_\_\_

9.  $3x^2 + 12x + 12 =$  \_\_\_\_\_

10.  $-2x^2 + 12x - 18 =$  \_\_\_\_\_

11.  $2p^2 - 8q^2 =$  \_\_\_\_\_

12.  $-3x^2 - 12y^2 =$  \_\_\_\_\_

13.  $ax^2 - 8ax + 16a =$  \_\_\_\_\_

14.  $bx^2 + bx + b =$  \_\_\_\_\_

15.  $-16x^2 - 9y^2 =$  \_\_\_\_\_

16.  $-4x^2 - 81y^2 =$  \_\_\_\_\_

17.  $a^2x^2 - 2ax + 1 =$  \_\_\_\_\_

18.  $a^2x^2 + 2abx + b^2 =$  \_\_\_\_\_

19.  $k^2s + 4ks + 4s =$  \_\_\_\_\_

20.  $a^2x^2 - 2abxy + b^2y^2 =$  \_\_\_\_\_

21.  $16u^2 - 40uv + 25v^2 =$  \_\_\_\_\_

22.  $49v^2 + 27vw - 4w^2 =$  \_\_\_\_\_

23.  $125a^2 - 80b^2 =$  \_\_\_\_\_ 24.  $12c^2 - 75d^2 =$  \_\_\_\_\_

25.  $10w^2 + 120t + 360 =$  \_\_\_\_\_ 26.  $3t^2 + 30t + 75 =$  \_\_\_\_\_

27.  $x^4 + 6x^2y^3 + 9y^6 =$  \_\_\_\_\_ 28.  $a^2t^4 - 14ab^2t^2 + 49b^4 =$  \_\_\_\_\_

29.  $9x^2 - 25y^2 =$  \_\_\_\_\_ 30.  $100u^2 - 81v^2 =$  \_\_\_\_\_

For problems #31-36, decide if the given polynomial is the square of a binomial. Write "Yes" if it is, and "No" if it isn't.

31.  $25a^2 + 70a + 49$  \_\_\_\_\_ 32.  $64x^2 + 80x + 25$  \_\_\_\_\_

33.  $144x^2 - 12x + 1$  \_\_\_\_\_ 34.  $121x^2 - 11x + 1$  \_\_\_\_\_

35.  $121y^2 - 22yz + z^2$  \_\_\_\_\_ 36.  $144t^2 - 24t + 1$  \_\_\_\_\_

For the remaining problems factor completely. (Hint: Factor out a negative sign first!)

37.  $-x^2 + 22x - 121$  \_\_\_\_\_ 38.  $-x^2 + 14x - 49$  \_\_\_\_\_

39.  $-4y^2 - 36y - 81$  \_\_\_\_\_ 40.  $-9y^2 - 24y - 16$  \_\_\_\_\_

41.  $-9z^2 + 42z - 49$  \_\_\_\_\_ 42.  $-4z^2 + 20z - 25$  \_\_\_\_\_