Algebra 1

Topic: Factoring Special Products

Instructions

Factor the following special products. Show all steps clearly and check your solutions.

Practice Problems

1. **Factor the following differences of squares:**

   (i) $x^2 - 9$
   (ii) $4x^2 - 25$
   (iii) $25y^2 - 16$
   (iv) $16x^2 - 81$
   (v) $9a^2 - 49$
   (vi) $64x^2 - 144$

2. **Factor the following perfect square trinomials:**

   (i) $x^2 + 6x + 9$
   (ii) $4x^2 + 12x + 9$
   (iii) $9y^2 - 24y + 16$
   (iv) $16x^2 + 8x + 1$
   (v) $25x^2 + 20x + 4$
   (vi) $36a^2 - 12a + 1$

3. **Factor the following sum and difference of cubes:**

   (i) $x^3 - 8$
   (ii) $27x^3 + 125$
   (iii) $8x^3 - 125$
   (iv) $x^3 + 64$
   (v) $x^3 - 27$
   (vi) $8a^3 + 27$

4. **Factor the following special products:**

(i) $x^2 - 6x + 9$

(ii) $9x^2 + 12x + 4$

(iii) $4x^2 + 8x + 4$

(iv) $x^2 + 10x + 25$

(v) $4a^2 - 12a + 9$

(vi) $16x^2 - 40x + 25$

Multiple-Choice Questions

1. What is the factorization of $x^2 - 16$?

   A. $(x - 4)(x + 4)$

   B. $(x + 4)(x + 4)$

   C. $(x - 8)(x + 2)$

   D. $(x - 4)(x - 4)$

2. What is the factorization of $9x^2 - 25$?

   A. $(3x + 5)(3x - 5)$

   B. $(3x - 5)(3x + 5)$

   C. $(x + 5)(9x - 25)$

   D. $(9x + 5)(x - 5)$

3. What is the factorization of $x^2 + 10x + 25$?

   A. $(x + 5)(x + 5)$

   B. $(x - 5)(x + 5)$

   C. $(x + 5)(x - 5)$

   D. $(x + 2)(x + 2)$

4. What is the factorization of $x^3 - 8$?

   A. $(x - 2)(x^2 + 2x + 4)$

   B. $(x - 2)(x^2 + 4x + 8)$

   C. $(x + 2)(x^2 - 2x + 4)$

   D. $(x + 2)(x^2 - 2x + 2)$

5. What is the factorization of $x^3 + 27$?

   A. $(x + 3)(x^2 - 3x + 9)$

   B. $(x - 3)(x^2 + 3x + 9)$

   C. $(x + 3)(x^2 + 3x + 3)$

   D. $(x - 3)(x^2 - 3x + 3)$