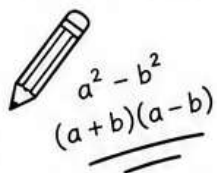


Name: _____

Class: _____

Date: _____



Factoring Polynomials Worksheet

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Factor it!

Factor each polynomial completely. Use the greatest common factor (GCF), difference of squares, or trinomials as needed.

1. Factor out the greatest common factor (GCF).

a) $6x + 12 =$ _____

b) $9x^2 - 15x =$ _____

c) $4a^2b + 8ab^2 =$ _____

d) $14m^3 - 21m^2 =$ _____

e) $18p^2q - 6pq^2 =$ _____

f) $25x^4 + 10x^3 =$ _____

2. Factor trinomials ($a \neq 1$).

a) $x^2 + 5x + 6 =$ _____

b) $x^2 - 7x + 12 =$ _____

c) $p^2 + 8p + 15 =$ _____

d) $m^2 - 6m + 8 =$ _____

e) $x^2 + 11x + 24 =$ _____

f) $y^2 - 9y + 18 =$ _____

3. Factor the difference of squares.

a) $x^2 - 16 =$ _____

b) $9y^2 - 25 =$ _____

c) $4a^2 - b^2 =$ _____

d) $100 - 49x^2 =$ _____

e) $36m^2 - 64 =$ _____

f) $81p^2 - q^2 =$ _____

4. Factor the perfect square trinomials.

a) $x^2 + 6x + 9 =$ _____

b) $x^2 - 10x + 25 =$ _____

c) $4x^2 + 12x + 9 =$ _____

d) $9y^2 - 12y + 4 =$ _____

e) $16a^2 + 8a + 1 =$ _____

f) $25m^2 - 20m + 4 =$ _____

5. Factor by grouping.

a) $x^3 + 3x^2 + 2x + 6 =$ _____

b) $2a^3 + 4a^2 + a + 2 =$ _____

c) $x^3 - x^2 - 4x + 4 =$ _____

d) $3x^3 + 6x^2 - x - 2 =$ _____

e) $5y^3 - 10y^2 + 3y - 6 =$ _____

f) $2m^3 - 8m^2 + 3m - 12 =$ _____

6. Factor the polynomial completely.

a) $x^3 - 27 =$ _____

b) $8x^3 + 125 =$ _____

c) $x^4 - 16 =$ _____

d) $27y^3 - 1 =$ _____

e) $4x^2 - 12x + 9 =$ _____

f) $6x^2 - 15x - 21 =$ _____

7. Choose the correct factorization.

a) $x^2 - 9$

A. $(x+3)(x-3)$ B. $(x+9)(x-1)$ C. $(x-3)(x-3)$

b) $16x^2 - 24x + 9$

A. $(4x-3)(4x-3)$ B. $(4x+3)(4x-3)$ C. $(2x-3)(8x-3)$

c) $x^2 + 4x + 4$

A. $(x+2)(x+2)$ B. $(x+4)(x+1)$ C. $(x-2)(x+2)$

d) $6x^2 + 9x$

A. $3x(2x+3)$ B. $2x(3x+4)$ C. $6x(x+1)$

8. Solve. (Factor first, then find the solutions.)

a) $x^2 - 5x = 0$

$x =$ _____

b) $x^2 - 9 = 0$

$x =$ _____

c) $x^2 + 6x + 8 = 0$

$x =$ _____

d) $2x^2 - x - 3 = 0$

$x =$ _____

9. Write the polynomial in factored form.

a) $x^2 + 7x + 12 =$ _____

b) $x^2 - 5x - 6 =$ _____

c) $4x^2 + 8x =$ _____

10. Which expression is factored completely?

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

B. $x^2 + 6x$

C. $2x(x+3)$

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

Factoring makes polynomials simpler!