Homework 7

Multiplying and Factoring Polynomials

Name: _____

Show all algebraic steps clearly. Factor completely whenever possible.

Part I: Multiply and Simplify

1.

$$(2x + 3)(x - 5)$$

2.

$$(3x - 4)(2x + 7)$$

3.

$$(x + 6)^2$$

4.

$$(2a - 5)^2$$

5.

$$(x+4)(x^2-3x+2)$$

6.

$$(3m-2n)(2m+5n)$$

Part II: Factor Using the Greatest Common Factor (GCF)

7. Factor completely.

   (a)
   $$6x^2 + 18x$$

   (b)
   $$12a^3b - 8a^2b^2$$

   (c)
   $$15m^2n + 20mn^2$$

Part III: Factor Trinomials

Factor each trinomial completely.

(a)
$$x^2 + 7x + 10$$

(b)

$$x^2 - 9x + 20$$

(c)

$$x^2 + 2x - 15$$

(d)

$$x^2 - 11x + 24$$

Part IV: Factor Using GCF First, Then Factor the Trinomial

(a)

$$3x^2 + 12x + 9$$

(b)

$$4y^2 - 20y + 16$$

(c)

$$5m^2 + 25m + 30$$

Part V: Factor Trinomials with Leading Coefficients Greater Than 1

(a)

$$2x^2 + 7x + 3$$

(b)

$$3x^2 - 11x - 4$$

(c)

$$6y^2 + y - 2$$

Part VI: Difference of Squares

Factor completely.

(a)

$$x^2 - 49$$

(b)

$$9a^2 - 25$$

(c)

$$16m^2 - 81n^2$$

(d)

$$25x^4 - 4y^2$$

Part VII: Applications

(a) The area of a rectangle is represented by

$$x^2 + 9x + 20.$$

Factor the expression to find possible dimensions of the rectangle.

(b) A square garden has area

$$x^2 - 16.$$

Factor the expression and explain what the factors represent.