

# Homework 8

## Factoring and Solving Quadratic Equations

Name: \_\_\_\_\_

For multiple choice questions, circle the correct answer. Show work for all free-response problems.

### Part I: Multiple Choice

Choose the best answer.

1. What are the solutions of

$$x^2 - \frac{7}{2}x - 15 = 0?$$

A. 6 and  $-\frac{5}{2}$

C.  $\frac{5}{2}$  and 6

B.  $-6$  and  $\frac{5}{2}$

D.  $-3$  and 5

2. What is the correct factorization of

$$x^2 + 6x + 8?$$

A.  $(x + 8)(x + 1)$

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

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

D.  $(x + 6)(x + 2)$

3. Factor and solve:

$$x^2 - 7x - 30 = 0.$$

What are the solutions?

- A.  $-10$  and  $3$   
B.  $10$  and  $-3$

- C.  $10$  and  $3$   
D.  $-6$  and  $5$

4. What are the solutions of

$$x^2 - x - 6 = 0?$$

- A.  $-2$  and  $-3$   
B.  $-2$  and  $3$

- C.  $2$  and  $-3$   
D.  $2$  and  $3$

5. What is the correct factorization of

$$3x^2 + 14x + 8?$$

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

- C.  $(3x + 8)(x + 1)$   
D.  $(x + 8)(3x + 1)$

6. What are the solutions of

$$x^2 + 4x - 12 = 0?$$

- A.  $-6$  and  $2$   
B.  $-2$  and  $6$

- C.  $3$  and  $-4$   
D.  $-3$  and  $4$

7. What is the complete factorization of

$$25x^2 - 36?$$

- A.  $(5x + 6)(5x + 6)$   
B.  $(5x - 6)(5x - 6)$

- C.  $(5x + 6)(5x - 6)$   
D.  $(25x - 6)(x + 6)$

**Part II: Free Response**

Solve each equation.

(a)

$$x^2 - 17 = 8x$$

(b)

$$x^2 - 16 = 0$$

(c)

$$x^2 + 20x - 100 = 0$$

(d)

$$2x^2 - 5x - 3 = 0$$

(e)

$$4x^2 - 25 = 0$$

### Part III: Applications

- (f) The area of a rectangular garden is represented by

$$x^2 + 11x + 24.$$

Factor the expression to determine possible dimensions of the garden.

- (g) A ball is thrown upward, and its height is modeled by

$$h(t) = -t^2 + 6t.$$

Find the times when the ball is on the ground.

- (h) A square patio has area

$$49x^2 - 81.$$

Factor the expression completely.