

Alg2 – Advanced Finding Factors to Find Roots, due Tuesday 10/10

From the problems in our textbook that begin on page 259 (also attached here.)

Do numbers 26-36 *evens*: follow the instructions and factor each expression. **In addition**, also find the roots (zeros/solutions) for the quadratic function defined by that expression. Check all of your factor solutions by multiplying to obtain the original equation. Check your roots by substituting into the original expression — a correct root will cause the value of the expression to be zero.

Answers should be on a separate piece of paper. And you may wish to double-check your solutions by graphing.

# EXERCISES

For more practice, see *Extra Practice*.

## Practice and Problem Solving

### A Practice by Example

**Example 1**  
(page 255)

1.  $3a^2 + 9$

4.  $5t^2 + 7t$

2.  $25b^2 - 35$

5.  $14y^2 + 7y$

3.  $x^2 - 2x$

6.  $27p^2 - 9p$

Find the GCF of each expression. Then factor the expression.

Factor each expression.

**Example 2**  
(page 256)

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

10.  $x^2 + 10x + 16$

8.  $x^2 + 5x + 6$

11.  $y^2 + 15y + 36$

9.  $x^2 + 7x + 10$

12.  $x^2 + 22x + 40$

**Example 3**  
(page 256)

13.  $x^2 - 3x + 2$

16.  $x^2 - 10x + 24$

14.  $x^2 - 13x + 12$

17.  $d^2 - 12d + 27$

15.  $r^2 - 11r + 18$

18.  $x^2 - 13x + 36$

**Example 4**  
(page 257)

19.  $x^2 - 5x - 14$

22.  $c^2 + 2c - 63$

20.  $x^2 + x - 20$

23.  $x^2 + 10x - 75$

21.  $x^2 - 3x - 40$

24.  $t^2 - 7t - 44$

**Example 5**  
(page 257)

25.  $3x^2 + 31x + 36$

28.  $2m^2 - 11m + 15$

26.  $2x^2 - 19x + 24$

29.  $5t^2 + 28t + 32$

27.  $5r^2 + 23r + 26$

30.  $2x^2 - 27x + 36$

**Example 6**  
(page 258)

Factor each expression.

31.  $3x^2 + 7x - 20$

34.  $2z^2 + z - 28$

37.  $x^2 + 2x + 1$

40.  $4n^2 - 20n + 25$

43.  $x^2 - 4$

32.  $5y^2 + 12y - 32$

35.  $3x^2 + 8x - 16$

38.  $t^2 - 14t + 49$

41.  $9x^2 + 48x + 64$

44.  $c^2 - 64$

33.  $7x^2 - 8x - 12$

36.  $28k^2 + 13k - 6$

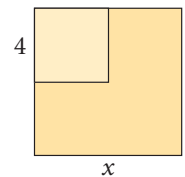
39.  $x^2 - 18x + 81$

42.  $81z^2 + 36z + 4$

45.  $9x^2 - 1$

**Example 7**  
(page 258)

46. **Manufacturing** Refer to the diagram at the right. A machine will cut a small square of plastic from a larger square. Write an expression for the remaining area. Factor the expression.

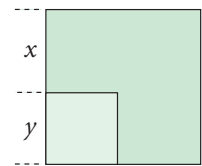


**Example 8**  
(page 259)

47. The area in square centimeters of a square mat is  $25x^2 - 10x + 1$ . Find the dimensions of the mat in terms of  $x$ .

48. The area of a rectangular cloth is  $(6x^2 - 19x - 85)$  cm<sup>2</sup>. The length is  $(2x + 5)$  cm. Find the width.

49. Refer to the diagram at the right. Suppose you cut a small square from a square sheet of cardboard. Write an expression for the remaining area. Factor the expression.



50. **Interior Design** The area of a rug is  $(x^2 - 11x + 28)$  ft<sup>2</sup> and its length is  $x - 4$ . What is the width of the rug?

### B Apply Your Skills