REVIEW PART 1
Solve the equation. NO DECIMALS. SHOW WORK.

1. \(x^2 - 25 = 3x^2 + 25\)

2. \(5(x + 3)^2 = -90\)

3. \(-4(x - 4)^2 - 48 = 0\)

Write the expression as a complex number in standard form.

4. \((-7 - 3i) - (-2 - 6i)\)

5. \((-4 - 3i) + (8 + 6i) - (7 + 10i)\)

6. \((6 + 3i)(5 - 7i)\)

7. \((7 - 5i)^2\)
8. \[ \frac{-6 + 2i}{3i} \]  
9. \[ \frac{-8 - 4i}{7 - 2i} \]

Solve the equation by completing the square. NO DECIMALS. SHOW WORK.

10. \[ x^2 - 10x + 43 = 0 \]  
11. \[ x^2 + 5x + 1 = 0 \]

12. \[ x^2 + 4x - 5 = 0 \]  
13. \[ 5x^2 + 2x + 3 = 10 - 8x \]

14. \[ 3x^2 + 4x + 2 = x^2 + 6x \]
Write the quadratic function in vertex form and identify the vertex. NO DECIMALS. SHOW WORK.

15. \( y = x^2 - 16x + 2 \)

16. \( y = -4x^2 - 16x - 3 \)

Find the value of \( x \) in the figure below. Round your answer to the nearest hundredth. SHOW WORK.

17. Area of rectangle = 12 square feet
REVIEW PART 2
Use the quadratic formula to solve the equation. NO DECIMALS. SHOW WORK.

18. \( x^2 - 5x - 14 = 0 \)
19. \( x^2 = 8x - 35 \)

20. \( 40x - 7x^2 = 101 - 3x^2 \)
21. \(-x^2 = 16x + 46 \)

Solve the equation by any method. NO DECIMALS. SHOW WORK.

22. \( 3(x + 4)^2 = -27 \)
23. \( x^2 + 4x = -9 \)

24. \(-9x^2 + 35x - 30 = 1 - x \)
Find the **discriminant** of the quadratic equation and give the number and type of solutions of the equation.

25. \( x^2 + 2x - 15 = 0 \)  
26. \( -2x^2 - 5x - 4 = 0 \)

27. \( -x^2 + 2x = 2 \)  
28. \( 3x^2 + 48 = 24x \)

Exercises 29-30, show your work. Round your answers to the nearest **hundredth**.

29. You are competing in the Field Target Event at a hot-air balloon festival. You throw a marker down from an altitude of 225 feet toward a target. When the marker leaves your hand, its speed is 30 feet per second. How long will it take the marker to hit the target?

30. A baton twirler tosses a baton into the air. The baton leaves the twirler’s hand 6 feet above the ground and has an initial vertical velocity of 45 feet per second. The twirler catches the baton when it falls back to a height of 5 feet. For how long is the baton in the air?
Graph the system of inequalities. SHOW YOUR WORK.

31.   \[ y > x^2 + 2x + 1 \]
      \[ y \geq x^2 - 4x + 4 \]

32.   \[ y \leq -x^2 - 6x - 4 \]
      \[ y < x^2 + 6x \]

Solve the inequality algebraically. NO DECIMALS. SHOW WORK.

33.   \[ -x^2 - 12x < 32 \]

34.   \[ 3x^2 - 16x + 5 \leq 0 \]