Directions: Write the polynomial equation of least degree for each set of roots given.
1. -3, 1, 0
2. 2 ± 3i, 4

Directions: Find the discriminant of each equation and describe the nature of the roots of the equation. Then solve each equation by using the quadratic formula.
3. \(x^2 + 8x - 2 = 0\)
4. \(x^2 - 2x + 7 = 0\)

Directions: Find the zeros of the following functions. Show all work.
5. \(f(x) = x^3 - x^2 - 34x - 56\)
6. \(f(x) = 2x^3 - 11x^2 + 12x + 9\)
7. \( f(x) = x^4 - 13x^2 + 36 \)  
8. \( f(x) = x^4 + x^3 - 9x^2 + 17x - 8 \)

**Directions:** Solve each equation. Show your work.

9. \( \sqrt{x} + 2 = x + 1 \)  
10. \( x + 1 - 2\sqrt{x} + 4 = 0 \)

11. \( 8\sqrt{x} + 7 \cdot x^3 - 21 = 0 \)  
12. \( \sqrt{x} + \sqrt{2x} = 4 \)

**Directions:** Solve each equation. Show your work.

13. \( \frac{x - 1}{x + 2} = 3 \)  
14. \( \frac{3x}{x + 5} + \frac{1}{x + 2} = \frac{7}{x^2 + 3x - 10} \)

15. \( \frac{1}{x} - \frac{2}{x + 3} = 4 \)  
16. \( \frac{2}{x + 1} \cdot 1 < \frac{1}{6} \)