Show all your work to get full/partial credit. Each problem is worth 5 points.

1. Determine the value of \( n \) that makes the polynomial a perfect square trinomial
   \[ x^2 - 6x + n \]

2. Solve using completing the square, \( x^2 - 6x = 7 \)

3. Use quadratic formula to solve, \( x^2 - 2x - 1 = 0 \)

4. Solve the radical equation, \( \sqrt{x + 7} = x - 5 \)

Let \( A = \{-1, -2, 0, 1, 3\} \) and \( B = \{-2, 0, 1, 2, 3\} \). Find,

5. \( A \cap B \)  
6. \( A \cup B \)

7. Write an inequality to represent the statement: A small plane must keep its speed over 220 mph but not more than 450 mph.
Solve inequalities #8, and #9. State the answer in the interval notation.

8. \[-2 \leq \frac{4x-1}{3} < 5\]
9. \[|x + 3| < 4\]

For #10 & #11, given that \(-2x + 4y = 12\)

10. Find x-intercept(s)  
11. Find y-intercept(s)

For #12 and #13, determine if the given relations are functions and justify your answers.

12.

13.

For #14 and #15, write the domain of each of the following functions in the interval notation.

14. \(f(x) = \frac{x-2}{2x+3}\)  
15. \(h(x) = \sqrt{x - 7}\)
16. For \( f(x) = x^2 - 3 \), determine the average rate of change of \( f(x) \) from \( x_1 = 1 \) to \( x_2 = 3 \). Note that average rate of change of a function \( f(x) \) from \( x_1 \) to \( x_2 \) is given by \( \frac{f(x_2) - f(x_1)}{x_2 - x_1} \).

17. Write the equation of the line passing through two points (1, 3) and (3, 4).

For #s 18 – 20, consider the circle in which the end points of a diameter are (-1, 0) and (4, 5)

18. Find the center of the circle.

19. Find the radius of the circle.

20. Write the equation of the circle in standard form.