1. Simplify the expression.
   A. \(2(x - 1)^2 - (x^2 - 2x + 4)\)       B. \(-2(x^2 - 2x + 4) + 3(x + 5)^2\)

2. Determine which is a function.
   A. \(\{(1, 2), (2, 3), (2, 4)\}\)       B. \(\{(0, 3), (2, 3), (3, 5)\}\)
   C. \(\{(3, 1), (5, 2), (7, 3)\}\)       D. The name of the month to the number of days in a month

3. For each of the following:
   1) Name the parent function
   2) Describe the parent function
   3) Write the equation of the parent function
   4) State the domain and range
   A. \(\sqrt{4}\)       B. \(\sqrt{4}\)       C. \(\sqrt{4}\)       D. \(\sqrt{4}\)

4. Identify the domain of the function
   A. \(q(x) = \frac{x + 4}{x - 3}\)       B. \(q(x) = \frac{x - 6}{3x - 2}\)       C. \(h(x) = \sqrt{x + 4}\)       D. \(h(x) = \sqrt{4x - 3}\)

5. Given the value, evaluate the function.
   A. \(f(\frac{3}{2})\) given \(f(x) = 3x^2 - x + 2\)       B. \(g(n + 3)\) given \(g(x) = 2 - 4n\)
   C. \(f(-\frac{3}{4})\) given \(f(x) = -2x^2 - 3x + 1\)       D. \(g(n - 1)\) given \(g(x) = 8 - 2n\)

6. Identify the transformations of the given function on its parent function \(f(x)\).
   A. \(g(x) = 2f(x + 4)\)       B. \(g(x) = -f\left(\frac{1}{2}x\right) - 2\)
   C. \(g(x) = \frac{1}{3}f(x) + 1\)       D. \(g(x) = f(-2x + 4)\)

7. Identify the x and y-intercepts of the graph of the given equation.
   A. \(3x - 2y = 12\)       B. \(5x - 3y = -30\)

8. Find the value of \(k\) so that the line through the given points and slope.
   A. \((k, k + 1); (3, 5); m = 3\)       B. \((k - 2, k + 2); (1, -3); m = \frac{3}{4}\)

9. Write an equation for the linear function \(f(x)\), in standard form, given the two points
   A. \((1, 5); (2, 3)\)       B. \((-2, 3); (3, -1)\)

10. Write an equation for the linear function \(f(x)\), in point-slope form, given a point and its slope.
    A. \((2, 4); m = 3\)       B. \((-2, -1); m = \frac{2}{3}\)

11. Write an equation for the linear function \(f(x)\), in slope-intercept form, given a point and parallel to the given line.
    A. \((-1, 2); y = \frac{2}{3}x + 3\)       B. \((0, -1); -4x - 3y = 2\)
12. Write an equation for the linear function \( f(x) \), in slope-intercept form, given a point and perpendicular to the given line.
   A. \( (2, 3) \); \( y = \frac{-2}{5} x + 3 \)  
   B. \( (0, -3) \); \( 2x - 3y = 2 \)

13. Solve each.
   A. \( 12 - \frac{2}{3} x = 4 - \frac{1}{2} x \)  
   B. \( 3|2t + 7| = 9 \)  
   C. \( 8 - 3x > 5 \)  
   D. \( |k + 4| \leq 8 \)  
   E. \( \frac{1}{3}|x - 1| - 2 > 4 \)  
   F. \( 6 - \frac{21}{3} x = 2 - \frac{3}{4} x \)  
   G. \( |k - 3| < 2 \)  
   H. \( 1 - \frac{2}{3} x < 5 \)  
   I. \( -2|x + 1| + 8 > 4 \)

PART II  Free Response (10 problems – 4 points each)  NO CALCULATOR

14. Write the equation of the graph shown below.
   A.  
   B.  
   C.  
   D.  

15. Write the equation of the line given the data below.
   A.  
   B.  

16. Sketch a graph that illustrates the given scenario.
   A. The height of the water in a water tub, if, initially, the tub is half empty. Water is added at a constant rate for 5 minutes. A person gets into the tub. Two minutes later two other people get into the tub at the same time. All three people remain in the tub for 15 minutes. At this time they get out of the tub, one at a time. The tub is drained at a constant rate until it is empty.
   B. The distance Juanita is from her house. Initially, she is at home. She walks to school for 5 minutes at constant rate. At this time, she realizes she forgot her math assignment, she returns home at the same rate. Once at home, it takes her 5 minutes to find her assignment. She again walks to school, this time at twice her initial rate. After 5 minutes she arrives at school.

17. Given the function:  
    1) Identify all applicable transformations on its parent function
    2) Sketch its graph
    A. \( f(x) = \frac{-4}{3} x - 2 \)  
    B. \( f(x) = \frac{1}{2} x + 3 \)  
    C. \( f(x) = |x - 3| + 2 \)  
    D. \( f(x) = 2|x| + 3 \)  
    E. \( f(x) = \frac{1}{2}|x + 2| \)  
    F. \( f(x) = |\frac{1}{3}x - 6| - 4 \)

18. Given the following question:
    1) Identify independent and dependent quantities.
    2) Write a linear function representing the situation.
    3) State what the slope and y-intercept represent in this question
    4) Answer the specific question.
    A. At noon a pump started emptying a pool at a constant rate. At 3 pm there were 100 gallons of water left in the pool. At 6 pm there were 40 gallons of water left. Find the time the pool will be empty.
    B. Marcus left his home flying in is plane, at 1 pm, at constant rate. His flight path was a straight line. At 1:15 pm, he was 100 miles from his home. At 1:45 pm he was 300 miles from home. Find the time Marcus was 450 miles from home.