1. Which expression is equivalent to \( t^2 - 36 \)?
   A. \( (t - 6)(t + 6) \)  
   B. \( (t + 6)(t - 6) \)  
   C. \( (t - 12)(t + 3) \)  
   D. \( (t - 12)(t - 3) \)

2. The floor of a rectangular cage has a length 4 feet greater than its width, \( w \). James will increase both dimensions of the floor by 2 feet. Which equation represents the new area, \( N \), of the floor of the cage?
   A. \( N = w^2 + 4w \)  
   B. \( N = w^2 + 6w \)  
   C. \( N = w^2 + 6w + 8 \)  
   D. \( N = w^2 + 8w + 12 \)

3. A rectangular garden measured 4 feet wide and 6 feet long. Each dimension is increased by \( x \) feet. Which equation represents the new area, \( A \), of the garden?
   A. \( A = 2x + 10 \)  
   B. \( A = x^2 + 10 \)  
   C. \( A = x^2 + 24 \)  
   D. \( A = x^2 + 10x + 24 \)

4. The area is found using the formula \( A = lw \), where \( A \) is the area, \( l \) is the length, and \( w \) is the width. The rectangle below has an area of 63 square feet.
   \[ l = x + 5 \]
   \[ w = x + 3 \]

   What is the width of the rectangle to the nearest foot?

5. What is the sum of the zeros of the function \( f(x) = x^2 - 6x + 8 \)?

6. While standing on a cliff 24 feet above the lake, Serena threw a rock with an initial velocity of 20 feet per second. The equation \( h = -16t^2 + 20t + 24 \) gives the height \( h \) of the rock after \( t \) seconds. How many seconds does it take for the rock to hit the water? (no calculator)

7. The function \( f(t) = -5t^2 + 20t + 60 \) models the approximate height of an object \( t \) seconds after it is launched. How many seconds does it take the object to hit the ground? (no calculator)

8. A rock is thrown up from the ground at an initial velocity of 84 feet per second. The formula \( h = -16t^2 + 84t \) gives the rock's height in feet after \( t \) seconds. What is the maximum height of the rock?
   A. 68 feet  
   B. 84 feet  
   C. 110 feet  
   D. 179 feet

9. A baseball is thrown upward from the top of a building. The height of the ball \( t \) seconds after it was thrown into the air is modeled by the function \( h(t) = -16t^2 + 50t + 75 \). How many seconds does it take for the ball to hit the ground?
   A. 1.5 seconds  
   B. 3 seconds  
   C. 4.2 seconds  
   D. 6.3 seconds
10. Which is the graph of the function \( f(x) = 4x^2 - 8x + 7 \)?