Circle the correct answer to problems 1-3. You must show work to receive credit.

(6 pts)
1. Which of the following most closely resembles the graph of $2x + 3y = 9$?

A. 
B. 
C. 
D. 
E. 

(6 pts)
2. If $f(x) = 4x + 2$ and $g(x) = x^2 - 6$, find $(f - g)(5)$

A. 3 
B. 53 
C. -9 
D. 41 
E. -41 

(6 pts)
3. Find the slope of the line containing $(7, -2)$ and $(3, 4)$

A. $m = \frac{2}{3}$ 
B. $m = -\frac{2}{3}$ 
C. $m = 0$ 
D. $m = -\frac{3}{2}$ 
E. slope is undefined
4. Write an equation of the line through the point (0, 3) and perpendicular to the line $3x - y = 7$

5. Multiply and simplify your answer.
   a. $(y + 2)(y^2 - 5y + 10)$
   b. $(x - 7)^2$

6. If $f(x) = \frac{3}{x + 3}$ and $g(x) = \frac{4}{x - 4}$, find the domain of $(f \cdot g)(x)$
7. Factor completely.
   (6 pts)
   a. \(3x^3y - 27xy\)
   
   (6 pts)  
   b. \(7x^2 + 35x - 98\)
   
8. In 1940 the record for the shot put (a track and field event) was 42 feet. In 1960, it was 49.5 feet. Let R represent the record in the shot put in feet and \(t\) the number of years since 1940.
   (8 pts)
   a. Find a linear function \(R(t)\) that fits the data. Use proper notation.
   
   (6 pts) 
   b. Use this function to predict the shot put record in 1999.
   
   Shot put record in 1999 =
9. President Beering’s boat took 6 hours to travel with the current and 10 hours to travel the same distance against the current. The current is 5 miles per hour. (Name a variable(s), set up an equation and solve.)

(6 pts) a. Find the speed of President Beering’s boat in still water.

\[ \text{Speed} = \] 

(6 pts) b. Find the TOTAL distance he traveled in the boat.

\[ \text{Total distance Traveled} = \] 

10. How much of a 30% saline solution is to be mixed with a 45% saline solution to get 300 liters of 41% saline solution? (Name a variable(s), set up an equation and solve.)

(12 pts) 

\[ \text{Amount of 30\% Saline solution} = \]