1. Find the slope of the line connecting points with coordinates (–2, 4) and (–3, 1). Circle the correct answer.
   (4 points)
   a.) \(\frac{1}{3}\)
   b.) –3
   c.) \(-\frac{1}{3}\)
   d.) 3
   e.) \(-\frac{3}{5}\)

2. Find the equation in slope-intercept form of a line passing through the point with coordinates (–1, 2) and parallel to the line with equation \(y = 2x - 4\). Sketch the line represented by your new equation. (6 points)
   Equation: ____________________

3. Graph the quadratic function below. Identify the coordinates of the vertex, the \(x\) and \(y\) intercepts, state the range of the function and sketch. (8 points)

   \(y = f(x) = x^2 - 4x - 5\)

   Coordinates of vertex: _______

   \(x\) intercept(s): ______________

   \(y\) intercept(s): ______________

   Range: ______________
4. The revenue function for a manufacturer’s product is \( R = 1800q - 3q^2 \), where \( R \) is the total revenue (in dollars) when \( q \) units are demanded (per week). Find the \( q \) value that maximizes the manufacturer’s total revenue for a given week. (6 points) 

5. Solve the system of equations below. Show appropriate work. (6 points) 

\[
\begin{align*}
2x - y &= 5 \\
3x + 2y &= 18
\end{align*}
\]

6. Find the solution of the system of equations below algebraically. (6 points) 

\[
\begin{align*}
p &= \sqrt{q} \\
p &= q^2
\end{align*}
\]

Solution: 

7. Graph each function below on the axes provided. Place at least 3 labeled points on each graph. (5 points each) 

a.) \( y = f(x) = 3^x + 1 \)  
b.) \( y = f(x) = \log_3 x \). 

![Graph a.)](image1.png)  

![Graph b.)](image2.png)
Classify each of the following as True or False by circling the appropriate letter. (3 points each)

a.) \( \log_b 1 = 1 \)  
T       F

b.) \( \frac{1}{2} \log x = \log \sqrt{x} \)  
T       F

c.) \( \log_b (m + n) = \log_b m + \log_b n \)  
T       F

d.) \( \ln x - \ln y = \frac{\ln x}{\ln y} \)  
T       F

9. Evaluate \( 2^{\log_2 (x+1)} \). Circle the correct answer. (5 points)

a.) \( 2^{x+1} \)  

b.) \( x + 1 \)  

c.) \( 4(x + 1) \)  

d.) \( (x + 1)^2 \)  

e.) None of the above

10. Write as a single logarithm with a coefficient of 1. (4 points)  
\[ 3 \ln x + 4 \ln y - \ln z \]

11. Write the expression in terms of \( \ln x \), \( \ln (x + 1) \) and/or \( \ln (x - 2) \). (4 points)  
\[ \ln \frac{x^3}{(x + 1)(x - 2)} \]
Solve each equation below. Show appropriate steps.

(a) and (b): 4 points each; (d) and (e): 5 points each

a.) \(3^{2x} = 81\)

b.) \(\log_2 32 = y\)

c.) \(\log_2 (x + 5) = 3 + \log_2 (x - 3)\)

d.) \(\log_2 (x + 6) = 2\)

e.) If \(\ln 2 = a, \ln 9 = b\) and \(\ln 7 = c\), solve the equation below and state your answer in terms of \(a, b\) and \(c\).

\(9(2^x) = 7\)

13. The equation \(A = P(1.075)^t\) gives the value \(A\) at the end of \(t\) years of an investment of \(P\) dollars compounded annually at an annual interest rate of 7.5%. How many years will it take for an investment to triple? You may leave your answer in terms of logarithms. (6 points)