1. Perform the indicated operation and/or simplify:
   
   a) \(- (3 - 5) - [2 - (3^2 - 13)]\)  
   b) \((3k - 2)(k^2 + 5k - 4)\)  
   c) \(-4^{-2}\)  
   d) \(27^{2/3}\)  
   e) \(\frac{7}{p} + \frac{9}{2p} + \frac{1}{3p}\)  
   f) \(\frac{1}{1 - \sqrt{2}}\)  
   g) \(\frac{a}{a+1} + \frac{1}{a}\)  
   h) \(\frac{1}{a} + \frac{1}{a+1}\)  

2. Factor:
   
   a) \(12x^2 - 26x - 10\)  
   b) \(4m^2 - 9\)  
   c) \(5(4x - 3)^3 + 2(4x - 3)^2\)  
   d) \(2y^2 - 2z - ay^2 + az\)  

3. Solve:
   
   a) \(2k + 3(k - 4) = 2(k - 3)\)  
   b) \(4 - 3x \leq 7 + 2x\)  
   c) \(|x - 2| < 5\)  
   d) \(6r^2 + 7r = 3\)  
   e) \(x^2 + 1 = 4x\)  
   f) \(q^3 - 4q > 0\)  
   g) \(\frac{x}{x - 2} = \frac{2}{x - 2} + 2\)  

4. Find the equation of the line:
   
   a) through (2, 3) with slope \(-2\)  
   b) through \((-1, -3)\) and \((-2, -1)\)  
   c) vertical and through \((4, 6)\)  
   d) through \((-1, 1)\) and parallel to \(2x + y = 4\)  

5. Sketch the graph of the following functions. Do not plot points.
   
   a) \(f(x) = -(x + 2)^2\)  
   b) \(g(x) = 2(x - 3)^2 - 5\)  
   c) \(h(x) = 3x^4 + x^3 - 2x^2\)  
   d) \(s(x) = \frac{x - 1}{x + 2}\)  

6. Let \(g(x) = -x^2 + 4x - 5\). Find the following:
   
   a) \(g(-2)\)  
   b) \(\frac{g(x+h) - g(x)}{h}\)  

7. Applications:
   
   a) Chuck travels 80 kilometers in the same time that Mary travels 180 kilometers. Mary travels 50 kilometers per hour faster than Chuck. Find the speed of each person.
   
   b) The marginal cost to produce an anticlot drug is $10 per unit, while the cost to produce 100 units is $1500. Find the cost function \(C(x)\), given that it is linear.
   
   c) Ms. Klein-Herring owns and operates Aunt Emma's Blueberry Pies. She has hired a consultant to analyze her business operations. The consultant tells her that her profits, \(P(x)\), from the sale of \(x\) unit of pies, are given by \(P(x) = 120x - x^2\). How many units of pies should be sold in order to maximize profit? What is the maximum profit?