1. Write (only) an analysis and design conforming to the on-line handout An Analysis and Design Style Guideline for the following problem statements:

   a. (5 points) The function (only) described in Programming Project #7 on page 243 of the textbook to compute and return the gravitational attractive force between two bodies.

   b. (5 points) A quadratic equation of the form $ax^2+bx+c = 0$ has real roots if the discriminant $b^2-4ac$ is nonnegative. Write a function (only) `HasRealRoots` that receives the integer coefficients $a$, $b$, and $c$ of a quadratic equation, and returns true if the equation has real roots and false otherwise.

2. Consider the following program:

   ```cpp
   // Function prototype
   void SumDiff (int num1, int num2, int& num3, int& num4);

   int main ()
   {
      int w, x, y, z;
      
      x = 4;
      y = 6;
      z = 3;
      w = 5;
      
      cout << "   x   y   z   w" << endl;
      cout << "   " << x << "   " << y << "   " << z << "   " << w << endl;
      SumDiff (x, y, z, w);
      cout << "   " << x << "   " << y << "   " << z << "   " << w << endl;
      SumDiff (z, w, y, x);
      cout << "   " << x << "   " << y << "   " << z << "   " << w << endl;
   }
   ```

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return 0;
}  // end main

// Function definition
void SumDiff (int num1, int num2, int& num3, int& num4)
{
    num3 = num1 + num2;
    num4 = num1 - num2;
}  // end SumDiff

Answer the following questions

a. (5 points) Which variables are value parameters? Which variables are reference parameters? What is the difference between a value parameter and a reference parameter?

b. (5 points) What is the output of this program? Note there are 4 lines of output.