Quiz

This work complies with the JMU Honor Code.

Name:_____ Signature:_____

1. What would be returned by the following function if it were passed an array containing the values `{5, 4, 7, 2}`?

```
/**
 * Calculate the mean of a population
 *
 * @param data   The population
 */
public static double mean(double[] data)
{
   double     result;   // The result (to be returned)
   double     total;    // The sum of all of the values

   total = 0;

   // Calculate the sum
   for (int i=0; i<data.length; i++)
   {
      total += data[i];
   }

   // Calculate the mean
   if (data.length < 0) result = Double.POSITIVE_INFINITY;
   else                 result = total / data.length;


   return result;
}
```

2. Briefly describe the purpose of the above function.

3. What would be returned by the following function if it were passed an array containing the values `{5, 4, 7, 2}`?

```
    public static double[] r(double[] d)
    {
       // Declare one of the values
       double one;
       int fish = 1;
       double              two = d[0]; // Declare the other value

       /*
        * Initialize
        */
       one = d[0];
       while (fish
< d.length)
       {



          if (d[fish] < two)
          {                  two = d[fish];
          }

              if (d[fish] > one)
one = d[fish];

          fish = 1 + fish;          // Update
       }

       double[] c;
             c = new double[2];
       c[0] = two;
             c[1] = one;

       return c;
    }
```

4. Briefly describe the purpose of the above function.

5. Given the following `standardDeviation()` function and the `mean()` function above, describe how the two are related.

```
/**
 * Calculate the standard deviation of a population
 *
 * @param data   The population
 */
public static double standardDeviation(double[] data)
{
   double      result;   // The result (to be returned)
   double      ssd;      // The sum of the squared deviations
   double      xbar;     // The mean of the population

   xbar = mean(data);
   ssd  = 0;

   for (int i=0; i<data.length; i++)
   {
      ssd += Math.pow((data[i]-xbar) , 2.0);
   }

   // The standard deviation is the square root of the ssd/n
   result = Math.sqrt(ssd/data.length);

   return result;
}
```

6. Given the following `difference()` function and the `r()` function above, describe how the two are related.

```
public static double difference(double[] d)
{
   double a = e = d[0];
   int    i = 1;

   while (i < d.length)
   {
      if (d[i] < e) e = d[i];
      if (d[i] > a) a = d[i];

      i = 1 + i;
   }

   return e - a;
}
```