A class called MyPoint, which models a 2D point with x and y coordinates, is designed as follows: Two instance variables x (int) and y (int).

□ A default (or "no-arg") constructor that construct a point at the default location of (0, 0).

□ A overloaded constructor that constructs a point with the given x and y coordinates.

□ A method setXY() to set both x and y.

□ A method getXY() which returns the x and y in a 2-element int array.

□ A toString() method that returns a string description of the instance in the format "(x, y)".

□ A method called distance(int x, int y) that returns the distance from this point to another point at the given (x, y) coordinates

□ An overloaded distance(MyPoint another) that returns the distance from this point to the given MyPoint instance (called another)

□ Another overloaded distance() method that returns the distance from this point to the origin (0,0) Develop the code for the class MyPoint. Also develop a JAVA program (called TestMyPoint) to test all the methods defined in the class.

Save Filename As: TestMyPoint.java

Solution:-

```
class MyPoint
{
  private int x;
  private int y;
  // Default Constructor
    public MyPoint ()
   {
      this(0, 0);
   }
```

```
// Overloaded Constructor
 public MyPoint (int x, int y)
 {
   this.x = x;
   this.y = y;
 }
 // Setters
 public void setXY (int x, int y)
 {
   this.x = x;
   this.y = y;
 }
 // Getters
 public int[] getXY ()
 {
    int[] coordinates = { x, y };
    return coordinates;
 }
 // Calculate distance to another point (x, y)
 public double distance (int x, int y)
 {
  return Math.sqrt (Math.pow (this.x - x, 2) + Math.pow (this.y - y, 2));
 }
 // Calculate distance to another MyPoint object
 public double distance (MyPoint another)
 {
```

```
    return Math.sqrt (Math.pow (this.x - another.x, 2) + Math.pow (this.y - another.y, 2));
 }
 // Calculate distance to the origin (0,0)
 public double distance ()
 {
   return Math.sqrt (Math.pow (this.x, 2) + Math.pow (this.y, 2));
 }
public String toString ()
 {
  return "(" + x + ", " + y + ")";
  }
}
public class TestMyPoint
{
 public static void main (String[] args)
 {
      MyPoint point1 = new MyPoint (); // Default constructor
      MyPoint point2 = new MyPoint (3, 4); // Overloaded constructor
      point1.setXY (5, 6); // Set x and y
      int[] coordinates = point2.getXY (); // Get x and y
      System.out.println ("Point 1: " + point1);
      System.out.println ("Point 2: " + point2);
      System.out.println ("Point 2 coordinates: (" + coordinates[0] + ", "  + coordinates[1] + ")");
      System.out.println ("Distance from Point 1 to (1, 2): "+ point1.distance (1,2));
      System.out.println("Distance from Point 2 to Point 1: " +point2.distance(point1));
      System.out.println("Distance from Point 2 to origin: " + point2.distance());
```

```
 }
}
```

Compile As: javacTestMyPoint.java

Run As: java TestMyPoint

Output:

```
Point 1: (5, 6)
Point 2: (3, 4)
Point 2 coordinates: (3, 4)
Distance from Point 1 to (1, 2): 5. 656854249492381
Distance from Point 2 to Point 1: 2.8284271247461903
Distance from Point 2 to origin: 5.0
```