```
 1  // joi/2/linear/LinearEquation.java
 2  //
 3  //
 4  // Copyright 2003 Bill Campbell and Ethan Bolker
 5
 6  /**
 7   * A LinearEquation models equations of the form y = mx + b.
 8   *
 9   * @version 2
10   */
11
12  public class LinearEquation
13  {
14      private double m;      // The equations's slope
15      private double b;      // The equations's y-intercept
16
17      /**
18       * Construct a LinearEquation from a slope and y-intercept.
19       *
20       * @param m the slope.
21       * @param b the y-intercept.
22       */
23
24      public LinearEquation( double m, double b )
25      {
26          this.m = m;
27          this.b = b;
28      }
29
30      /**
31       * Construct a LinearEquation from two points.
32       *
33       * @param x1 the x coordinate of the first point
34       * @param y1 the y coordinate of the first point
35       * @param x2 the x coordinate of the second point
36       * @param y2 the y coordinate of the second point
37       */
38
39      public LinearEquation( double x1, double y1,
40                             double x2, double y2 )
41      {
42          m = (y2 - y1) / (x2 - x1);
43          b = y1 - x1 * m;
44      }
45
46      /**
47       * Compute y, given x.
48       *
49       * @param x the input value.
50       * @return the corresponding value of y: mx+b.
51       */
52
53      public double compute( double x )
54      {
55          return m*x + b;
56      }
```



```
57
58      /**
59       * Compute the inverse of this linear equation.
60       *
61       * @return the LinearEquation object you get by "solving for x".
62       */
63
64      public LinearEquation getInverse()
65      {
66          return new LinearEquation( 1.0/m, -b/m );
67      }
68  }
```