```
 1  /* Problem 5--Stars of Elendil
 2     This was a simple application of trigonometry */
 3
 4  import java.io.*;
 5  import java.util.*;
 6
 7  public class prob5 {
 8
 9   private static Scanner in = null;
10   private static PrintWriter out = null;
11   private static int cs = 0;
12
13   public static void main (String[] args) throws Exception {
14
15    in = new Scanner (new File ("prob5.in"));
16    out = new PrintWriter ("prob5.out");
17    while (true) {
18     int n = in.nextInt ();
19     if (n==0) break; //Quit when we find 0
20     double x = in.nextDouble ();
21     Process (n,x);
22    }
23    in.close ();
24    out.close ();
25   }
26
27   /* Process processes a polygon with n sides of length x */
28   public static void Process (int n, double x) {
29
30    double t1 = Area (x,360.0/n); //Area of internal triangle
31    double t2 = Area (x,180-720.0/n); //Area of external triangle
32    double a = n*(t1+t2); //Total area
33    out.printf ("Case %d: The area of this %d-sided polygon is %.2f",
34                ++cs,n,a);
35    out.println ();
36   }
37
38   /* This computes the area of an isosceles triangle with third side x
39      and opposite angle a (in degrees). */
40   public static double Area (double x, double a) {
41
42    double s2 = x*x/(2*(1-Math.cos(a*Math.PI/180))); //Law of Cosines
43    return 0.5*s2*Math.sin(a*Math.PI/180); //Area formula
44   }
45  }
46
```