Assignment-6 IT-24057

```
import java.util.Scanner;
public class MathMethods {
public static void main(String[] args) {
 Scanner input = new Scanner(System.in);
System.out.println("Equation 1: calculate
the height of a right triangle.");
system.out.println("Enter base (b): ");
double base = input.nextDouble();
System.out.print("Enter angle (theta
in degrees): ");
double angleDeg = input.nextDouble();
double triangleHeight = base * Math.tan
(Math.toRadians(angleDeg));
System.out.println("Height: " + triangle
 Height);
```

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System.out.println("\n Equation 2: compound
Interest calculation.");
System.out.print("Enter principal (P): ");
double principal = input.nextDouble();
System.out.print("Enter Annual Interest
Rate (r as decimal): ");
double rate = input.nextDouble();
System.out.print("Enter Time in
years (t): ");
double years = input.nextDouble();
double totalAmount = principal * Math.
pow(1 + rate/compounds * years);
System.out.println("Total Amount: "
+totalAmount);
System.out.println("\n Equation 3:
convert cartesian to polar coordinates.");
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System.out.print("Enter x: ");
double xval = input.nextDouble();
System.out.print("Enter y: ");
double yval = input.nextDouble();
double radius = Math.sqrt(xval * xval +
 yval * yval);
double thetaDeg = Math.toDegrees(Math.
 atan2(yval, xval));
System.out.println("Radius: " + radius +
", Angle: " + thetaDeg + "°");

System.out.println("\n Equation 4:
calculate Distance Between Two points.");
System.out.print("Enter x1: ");
double x1 = input.nextDouble();
system.out.print("Enter Y1: ");
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double y1 = input.nextDouble();
System.out.print("Enter x2: ");
double x2 = input.nextDouble();
System.out.print("Enter y2: ");
double y2 = input.nextDouble();
double dist = Math.sqrt(Math.pow(x2-x1
,2)+Math.pow(y2-y1,2));
System.out.println("Distance: "+dist);
System.out.println("\n Equation 5: Solve
Quadratic Equation.");
System.out.print("Enter coefficient a: ");
double coeffA = input.nextDouble();
System.out.print("Enter coefficient b: ");
double coeffB = input.nextDouble();
System.out.print("Enter coefficient c: ");
double coeffC = input.nextDouble();
```

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double determinant = Math.pow(coeffB,2) - 4
 *coeffA*coeffC;
if (determinant >= 0){
double rootone = (-coeffB + Math.sqrt(determi
nant)) / (2 * coeffA);
double rootTwo = (-coeffB - Math.sqrt(determinant
)) / (2* coeffA);
System.out.println("Roots:" + rootone +
"," + rootTwo);
if (rootone >= 0 && rootTwo >= 0){
System.out.println("Smallest positive root:"
+ Math.min(rootone, rootTwo));}
else if (rootone >= 0){
system.out.println("Smallest positive root:"
    + rootone);}
```

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else if (rootTwo >= 0) {
System.out.println("Smallest positive root
: " + rootTwo); }
else {
System.out.println("No positive roots");
}
else {
System.out.println("No real roots");
}
input.close();
}
}
```