

* Assignment-6 : Practicing Math class methods.

Code

```
import java.util.Scanner;  
public class MathPractice{  
    public static void main (String [] args){  
        Scanner sc = new Scanner (System.in);
```

// Equation 1 : Right Triangle Height

```
System.out.println ("Equation 1 : Calculate the  
height of a right triangle");
```

```
double b = sc.nextDouble();
```

ID: IT24003

```
System.out.print ("Enter base (b) : ");
```

```
System.out.print ("Enter angle (theta in degrees) : ");
```

```
int theta = sc.nextInt();
```

```
double height = b * Math.tan (Math.toRadians(theta));
```

```
System.out.println ("Height : " + height);
```

// Equation 2: Compound Interest

```
System.out.println("In Equation 2: Compound Interest  
calculation.");
```

```
System.out.print("Enter Principal (P): ");
```

```
double P = sc.nextDouble();
```

```
System.out.print("Enter Annual Interest Rate: ");
```

```
double r = sc.nextDouble();
```

```
System.out.print("Enter number of compound  
per year: ");
```

```
int n = sc.nextInt();
```

```
System.out.print("Enter time in years (t): ");
```

```
double t = sc.nextDouble();
```

```
double A = P * Math.pow(1 + r/n, n*t);
```

```
System.out.println("Total Amount: " + A);
```

// Equation 3: Cartesian to polar

```
System.out.println("In Equation 3: Convert  
Cartesian to polar coordinates.");
```

```
System.out.print("Enter u: ");  
double u = sc.nextDouble();  
System.out.print("Enter y: ");  
double y = sc.nextDouble();  
double rpolan = Math.sqrt(Math.pow(u, 2) + Math.pow(y, 2));  
double thetaPolan = Math.toDegrees(Math.atan(y/u));  
System.out.println("Radius: " + rpolan + " Angle: " +  
thetaPolan + " °");
```

// Equation 4: Distance between two points
System.out.println("In Equation 4? Calculate Distance
between two points: ");

```
System.out.print("Enter u1: ");  
double u1 = sc.nextDouble();  
System.out.print("Enter y1: ");  
double y1 = sc.nextDouble();  
System.out.print("Enter u2: ");
```

```
System.out.print("Enter y2: ");  
double u2 = sc.nextDouble();
```

```
System.out.print("Enter y2 : ");
```

```
double y2 = sc.nextDouble();
```

```
double Distance = Math.sqrt(Math.pow((x2 - x1), 2) +  
Math.pow((y2 - y1), 2));
```

```
System.out.println("Distance: " + distance);
```

```
/* Equation : 5 : Quadratic Equation */
```

```
System.out.println("In Equation 5: Solve  
Quadratic Equation.");
```

```
double a = sc.nextDouble();
```

```
System.out.print("Enter coefficient b: ");
```

```
double b = sc.nextDouble();
```

```
System.out.print("Enter Coefficient c: ");
```

```
double c = sc.nextDouble();
```

```
double discriminant = Math.pow(b, 2) - 4 * a * c;
```

```
if (discriminant >= 0) {
```

```
double root1 = (-b + Math.sqrt(discriminant)) / (2 * a);
```

```
double rroot2 = (-b - Math.sqrt(discriminant)) / (2 * a);
```

```
System.out.println("Root1: " + rroot1 + ", Root2: " + rroot2);
```

```
if (rroot1 >= 0 & rroot2 >= 0)
```

```
System.out.println("Smallest positive root: " +  
Math.min(rroot1, rroot2));
```

```
else if (rroot1 >= 0)
```

```
System.out.println("Smallest positive root: " + rroot1);
```

```
else if (rroot2 >= 0)
```

```
System.out.println("Smallest positive root: " + rroot2);
```

```
else
```

```
System.out.println("No positive roots.");
```

```
else
```

```
System.out.println("Noneal roots.");
```

```
sc.close();
```