```java
import java.util.scanner;                    ID: IT24052
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.");
        System.out.print ("Enter base (b):
");
        double b = sc.nextDouble ();
        system.out.print ("Enter angle
(theta in degrees): ");
        double theta = sc.nextDouble ();
        double height = b *

Math.tan (Math.toRadians (theta));
        System.out.println ("Height: " +

height);
        // Equation 2: compound Interest
        system.out.println (" \n Equation 2:
```

Compound Interest Calculation:-)   ID: IT24052
        System.out.print ("Enter principal

(P): ");
        double p = sc.nextDouble ();
        System.out.print ("Enter Annual

Interest Rate (r as a decimal): ");

        double r = sc.nextDouble ();
        System.out.print ("Enter Number of

Compounds per year (n): ");
        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 ("\n Equation 3:

convert cartesian to polar coordinates.");

```java
System.out.print ("Enter x: ");
double x = sc.nextDouble();
System.out.print ("Enter y: ");
double y = sc.nextDouble();
double rpolar =
Math.sqrt (Math.pow (x,2) + Math. pow (y,
2));
double thetapolar =
Math.sqrttodegrees (math.atan (y/x));
System.out.println ("Radious :" +
rpolar + ", Angle : " + thetapolar + " 0");
// Equation 4: Distance Between

Two points
System.out.println ("\n Equation 4:

Calculate Distance Between Two points.");
System.out.print ("Enter x1: ");
double x1 = sc.nextDouble();
System.out.print ("Enter x2 :");
double x2 = sc.nextDouble();
System.out.print (" Enter y2 :");
double y2 = sc.nextDouble();
```

```java
        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 (" /Equation 5:
solve Quandratic Equation.");
        system.out. print ("Enter
coefficient b:");
        if (discriminant >= 0) {
            double root1 = ( -bQuad +
Math.sqrt (discriminant)) / (2*a);
            double root2 = (-bQuad
Math.sqrt. (discriminant)) / (2*a);
system.out. println ("smallest positive
root:" +root2);
            } else {
                system.out. println ("NO
positive roots."):
        }
    } else {
        system.out. println (" real
roots.");
    }       sc. close ();
}
}
```

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C:\Windows\System32\cmd.e    ×    +    ∨

D:\code>javac MathPractice.java

D:\code>java MathPractice
Equation 1: Calculate the height of a right triangle.
Enter base (b): 5
Enter angle (theta in degrees): 30
Height: 2.8867513459481287

Equation 2: Compound Interest Calculation.
Enter Principal (P): 100
Enter Annual Interest Rate (r as a decimal): 5
Enter Number of Compounds per Year (n): 5
Enter Time in Years (t): 10
Total Amount: 1.125899906842624E17

Equation 3: Convert Cartesian to Polar Coordinates.
Enter x: 5
Enter y: 10
Radius: 11.180339887498949, Angle: 63.43494882292201°

Equation 4: Calculate Distance Between Two Points.
Enter x1: 5
Enter y1: 6
Enter x2: 10
Enter y2: 6
Distance: 5.0

Equation 5: Solve Quadratic Equation.
Enter coefficient a: 5
Enter coefficient b: 45
Enter coefficient c: 65
Roots: -1.8074175964327481, -7.192582403567252
No positive roots.

D:\code>
```