#MathPractice (5.11.25) : (5 equation):

```java
import java.util.Scanner;   IT-24047

public class MathPractice{
    public static void main(String[] args){

    Scanner sc = new Scanner(System.in);


double b, theta, height;

double p, r, t, A;

double x, y, rpolar, thetapolar;

double a, bQuad, c, discriminant, root1, root2;

// Equation 1 , IT-24047

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

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

b = sc.nextDouble();
System.out.print("Enter angle (theta in degrees)
```

```java
theta = sc.nextDouble();
height = b * Math.tan(Math.toRadians(theta));
theta;

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


// Equation 2 , IT-24047

System.out.println("\n Equation 2: Compou
Interest calculation.");
System.out.print("Enter Principal (P): ");
    p = sc.nextDouble();
System.out.print("Enter Annual Interest
Rate (r as decimal, e.g. 0.05): ");
    r = sc.nextDouble();
System.out.print("Enter the number of
compounds per year (n): ");
    int n = sc.nextInt();
```

```java
system.out.println("Enter Time in year (t): ");
    t = sc.nextDouble();

    A = p * Math.pow(1 + r/n, n*t);
System.out.println("total Amount : " + A);


// Equation 3, IT-24047

system.out.println("\nEquation 3: convert cartesian

to polar coordinates.");

system.out.print("Enter x:");
    x = sc.nextDouble();

system.out.print("Enter y: ");

    y = sc.nextDouble();

    rpolar = Math.sqrt(Math.pow(x,2) + Math.pow(y,2));

thetapolar = Math.toDegrees(Math.atan2(y,x));

system.out.println("Radius : " + rpolar + ", Angle: "
    + thetapolar + "°");
```

```java
//Equation 4 , IT-24047

System.out.println("Equation 4: calculate
Distance Between Two points.");

System.out.print("Enter x1:");
    x1 = sc.nextDouble();

System.out.print("Enter y1:");
    y1 = sc.nextDouble();

System.out.print("Enter x2:");
    x2 = sc.nextDouble();

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

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

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

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```java
// Equation 5, IT-24047

System.out.println("Equation 5: Solve Quandratic
    Equation: ");

System.out.print("Enter coefficient a: ");
    a=se.nextDouble();

System.out.print("Enter coefficient b: ");
    b=se.nextDouble();

System.out.print("Enter coefficient c: ");
    c= se.nextDouble();

discriminant=Math.pow(bQuad,2)-4*a*c;
    if(discriminant>=0)
            root1=(-bQuad+Math.sqrt(discriminat))/
                (2*a);

root2=(-bQuad-Math.sqrt(discriminat))/(2*a);

System.out.println("Roots: "+root1+", "+root2);
```

```java
            if(root1>=0 && root2>=0)
            System.out.println("Smallest positive root:
                " + Math.min(root1, root2);

        else if( root1>=0)
        System.out.println("Smallest positive root:"+
            root1);

        else if (root2>=0)
        System.out.println("Smallest positive root:"+
                                                root2

        else
        System.out.println("No positive roots.");
    } else
            System.out.println("No real roots.");

        se.close();

    }
}
```