

**Problem 1:**

```
public class ArithDemo {

    public static void main(String[] args) {

        System.out.println("(1)" + " 42 / 5 = " + 42d / 5d);
        System.out.println("(2)" + " 42.0 / 5 = " + 42.0 / 5);
        System.out.println("(3)" + " 42 % 5 = " + 42 % 5);
        System.out.println("(4)" + " 40 % 5 = " + 40 % 5);
        System.out.println("(5)" + " 1 % 2 = " + 1 % 2);
        System.out.println("(6)" + " 2 % 1 = " + 2 % 1);
        System.out.println("(7)" + " 45 + 4*4 - 2 = " + (45 + 4*4 - 2));
        System.out.println("(8)" + " 45 + 43 % 5 * (23 * 3 % 2) = " + (45 + 43 % 5 * (23 * 3 %
2)));

        System.out.println("(9)" + " Math.sqrt(10) = " + Math.sqrt(10));
        System.out.println("(10)" + " Math.pow(5,2) = " + Math.pow(5,2));
        System.out.println("(11)" + " Math.pow(20.0,100) = " + Math.pow(20.0,100));
        System.out.println("(12)" + " Math.pow(20.0,1000) = " + Math.pow(20.0,1000));
        System.out.println("(13)" + " Math.pow(0.1,300) = " + Math.pow(0.1,300));
        System.out.println("(14)" + " Math.pow(0.1,400) = " + Math.pow(0.1,400));

        double x = 10;
        double y = 20;
        double a = 30;
        double b = 40;
        double c = 50;
        double ans1 = (3+4*x)/5 - (10*(y-5)*(a+b+c))/x + 9*(4/x+(9+x)/y);
        System.out.println("(15)" + " (3+4*x)/5 - (10*(y-5)*(a+b+c))/x + 9*(4/x+(9+x)/y) = "
+ ans1 );

        c = 100;
        x = y = a = b = c;
        double ans2 = (3+4*x)/5 - (10*(y-5)*(a+b+c))/x + 9*(4/x+(9+x)/y);
        System.out.println("(16)" + " (3+4*x)/5 - (10*(y-5)*(a+b+c))/x + 9*(4/x+(9+x)/y) = "
+ ans2 );

    }
}
```

**Output:**

(1)  $42 / 5 = 8.4$

(2)  $42.0 / 5 = 8.4$

(3)  $42 \% 5 = 2$

(4)  $40 \% 5 = 0$

(5)  $1 \% 2 = 1$

(6)  $2 \% 1 = 0$

(7)  $45 + 4 * 4 - 2 = 59$

(8)  $45 + 43 \% 5 * (23 * 3 \% 2) = 48$

(9)  $\text{Math.sqrt}(10) = 3.1622776601683795$

(10)  $\text{Math.pow}(5,2) = 25.0$

(11)  $\text{Math.pow}(20.0,100) = 1.2676506002282294\text{E}130$

(12)  $\text{Math.pow}(20.0,1000) = \text{Infinity}$

(13)  $\text{Math.pow}(0.1,300) = 1.000000000000000166\text{E}-300$

(14)  $\text{Math.pow}(0.1,400) = 0.0$

(15)  $(3+4*x)/5 - (10*(y-5)*(a+b+c))/x + 9*(4/x+(9+x)/y) = -1779.25$

(16)  $(3+4*x)/5 - (10*(y-5)*(a+b+c))/x + 9*(4/x+(9+x)/y) = -2759.23$