Assignment 2

**Question 1:** Write a program to implement a Complex number class in JAVA and also provide functions to perform addition, subtraction, multiplication and division.

**Code:**

class Complex

{

double real, img;

Complex(double x, double y)

{

real = x; img = y;

}

void add(Complex z)

{

this.real += z.real;

this.img += z.img;

}

void subtract(Complex z)

{

this.real -= z.real;

this.img -= z.img;

}

void multiply(Complex z)

{

Complex tmp = new Complex(this.real\*z.real - this.img\*z.img, this.real\*z.img + this.img\*z.real);

this.real = tmp.real;

this.img = tmp.img;

}

void divide(Complex z)

{

double z\_abs = z.real\*z.real + z.img\*z.img;

z = new Complex(z.real/z\_abs, -z.img/z\_abs);

this.multiply(z);

}

void display()

{

System.out.printf("%f+j%f\n", this.real, this.img);

}

}

public class test

{

public static void main(String[] args)

{

double a1 = Double.parseDouble(args[0]);

double a2 = Double.parseDouble(args[1]);

double a3 = Double.parseDouble(args[2]);

double a4 = Double.parseDouble(args[3]);

Complex a = new Complex(a1, a2);

Complex b = new Complex(a3, a4);

a.add(b);

System.out.println("Result for addition:");

a.display();

a.real = a1; a.img = a2;

a.subtract(b);

System.out.println("Result for subtraction:");

a.display();

a.real = a1; a.img = a2;

a.multiply(b);

System.out.println("Result for multiplication:");

a.display();

a.real = a1; a.img = a2;

a.divide(b);

System.out.println("Result for division:");

a.display();

}

}

**Test case 1:**

**Input:** 1 2 3 4

**Output:**

Result for addition:

4.000000+j6.000000

Result for subtraction:

-2.000000+j-2.000000

Result for multiplication:

-5.000000+j10.000000

Result for division:

0.440000+j0.080000

**Test case 2:**

**Input:** 2.3 4.1 5.6 7.9

**Output:**

Result for addition:

7.900000+j12.000000

Result for subtraction:

-3.300000+j-3.800000

Result for multiplication:

-19.510000+j41.130000

Result for division:

0.482777+j0.051082