Engr 123
Methods and Class examples

```
//This program does the quadratic equation with no methods and no classes
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace QuadraticMethods
    {class Program
        {static void Main(string[] args)
           {double a, b, c;
            double root1, root2, discr;
            double real, imag;
            Console.Write("Enter coefficient 1...");
            a = Convert.ToInt32(Console.ReadLine());
            Console.Write("Enter coefficient 2...");
            b = Convert.ToInt32(Console.ReadLine());
            Console.Write("Enter coefficient 3...");
            c = Convert.ToInt32(Console.ReadLine());
            discr = b * b - 4 * a * c;
            if (discr > 0)
                {root1 = -b / (2 * a) + Math.Sqrt(discr) / (2 * a);
                 root2 = -b / (2 * a) - Math.Sqrt(discr) / (2 * a);
                 Console.WriteLine(root1);
                 Console.WriteLine(root2);
                }
            else if (discr == 0)
                {root1 = (-b / (2 * a));
                 root2 = (-b / (2 * a));
                 Console.WriteLine(root1);
                 Console.WriteLine(root2);
                }
            else
                {real = -b / (2 * a);
                 imag = -Math.Sqrt(-discr / (2 * a));
                 Console.Write(real);
                 Console.Write(" + i");
                 Console.WriteLine(imag);
                }
            }
        }
    }
```

```
//This program does the quadratic equation with two methods – no classes
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace QuadraticMethods
    {class Program
        {static void Main(string[] args)
           {double a, b, c;
            double root1, root2, discr;
            double real, imag;
            Console.Write("Enter coefficient 1...");
            a = Convert.ToInt32(Console.ReadLine());
            Console.Write("Enter coefficient 2...");
            b = Convert.ToInt32(Console.ReadLine());
            Console.Write("Enter coefficient 3...");
            c = Convert.ToInt32(Console.ReadLine());
            discr = b * b - 4 * a * c;
            if (discr > 0)
                {root1 = -b / (2 * a) + Math.Sqrt(discr) / (2 * a);
                 root2 = -b / (2 * a) - Math.Sqrt(discr) / (2 * a);
                 PrintTwoRoots(root1, root2);
                }
            else if (discr == 0)
                {root1 = (-b / (2 * a));
                 root2 = (-b / (2 * a));
                 PrintTwoRoots(root1, root2);
                }
            else
                {real = -b / (2 * a);
                 imag = -Math.Sqrt(-discr / (2 * a));
                 PrintRealImag(real, imag);
                }
            }

      static void PrintTwoRoots( double r1, double r2)
           {Console.WriteLine(r1);
            Console.WriteLine(r2);
           }
      static void PrintRealImag(double r, double i)
          {Console.Write(r);
           Console.Write(" + i");
           Console.WriteLine(i);
         }

        }
    }
```

```
//This program uses a PrintRoots class to hold the methods
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace QuadraticConsoleClass
    {
    class Program
        {
        static void Main(string[] args)
            {
            double a, b, c;
            double root1, root2, discr;
            double real, imag;
            Console.Write("Enter coefficient 1...");
            a = Convert.ToInt32(Console.ReadLine());
            Console.Write("Enter coefficient 2...");
            b = Convert.ToInt32(Console.ReadLine());
            Console.Write("Enter coefficient 3...");
            c = Convert.ToInt32(Console.ReadLine());
            discr = b * b - 4 * a * c;
            if (discr > 0)
                {
                root1 = -b / (2 * a) + Math.Sqrt(discr) / (2 * a);
                root2 = -b / (2 * a) - Math.Sqrt(discr) / (2 * a);
                PrintRoots.PrintTwoRoots(root1, root2);
                }
            else if (discr == 0)
                {
                root1 = (-b / (2 * a));
                root2 = (-b / (2 * a));
                PrintRoots.PrintTwoRoots(root1, root2);
                }
            else
                {
                real = -b / (2 * a);
                imag = -Math.Sqrt(-discr / (2 * a));
                PrintRoots.PrintRealImag(real, imag);
                }
            }

        }
    }
namespace QuadraticConsoleClass
    {
    static class PrintRoots
        {
        public static void PrintTwoRoots(double r1, double r2)
            {
            Console.WriteLine(r1);
            Console.WriteLine(r2);
            }
        public static void PrintRealImag(double r, double i)
            {
            Console.Write(r);
            Console.Write(" + i");
            Console.WriteLine(i);
            }

        }
    }
```