

## Linked List Project

### “Operations on Polynomials”

Write a class called AlgebraCalc that describes a polynomial such as

$$f(x) = 4x^9 + 3x^6 - 2x + 7$$

Store a polynomial as a linked list of terms. A term contains the coefficient and the power of x. For example, you would store  $f(x)$  as

(4,9), (3,6), (-2,1), (7,0)

Supply methods to add, multiply, and print polynomials, and to compute the derivative of a single polynomial (if you don't know the Power Rule in Calculus, just ask.)

The following testers might be helpful to you.

```
public class TermTester
{
    public static void main(String[] args)
    {
        Term p = new Term(3,5);
        Term q = new Term(2,5);
        Term r = new Term(4,6);

        System.out.println(p.add(q));
        System.out.println(q.multiply(r));
    }
}
```

**OUTPUT:**        5x^5  
                  8x^11

```
public class PolynomialTester
{
    public static void main(String[] args)
    {
        Polynomial p = new Polynomial();
        p.addTerm(3,4);
        p.addTerm(-2,0);
        p.addTerm(1,3);

        System.out.println("Polynomial p");
        System.out.println(p);
    }
}
```

**OUTPUT:**        Polynomial p  
                  +3 \* x^4 + 1 \* x^3 -2  
                  //Notice that the terms are in decreasing order