Programming Assignment Week 6:

(150pts)

Design a **Polynomial** Class so that

1. The constructor can take an arbitrary number of coefficients starting from a0 to an. No-arg constructor will create an polynomial 0 (only a0=0).
2. __doc__ string of the class can be shown
3. Each Polynomial object p can be used to evaluate with different value of x:
   e.g.
   x = 3
   p = Polynomial(1, 2, 3)
   print(p(3)) # 34
4. Dimension: p.dim()
   # In p's case, it should be 2.
5. Addition and Subtraction of polynomials
6. Conversion of a polynomial to a string. (implement __str__ and __repr__ methods)

Expected Results:

```
>>print(Polynomial.__doc__)
Polynomisl Class:
       argument list: [a0, a1, a2, a3, a4, ..., an]
                      which represents
                      a0 + a1x^1 + a2x^2 + ... + anx^n
>>p0 = Polynomial()
>>print(p0)
0
>>print(p0(3))
0
>>p1 = Polynomial(0)
>>print(p1)
0
>>print(p1(3))
0
>>p2 = Polynomial(1, 2, 3)
0
>>print(p2)
1 + 2x^1 + 3x^2
>>print(p2(3))
34
>>print(p2.dim())
2
```

```
>>p3 = Polynomial(0, 0, 0, 0, 1)

>>p4 = p3 + p2
>>print(p4)
1 + 2x^1 + 3x^2 + 1x^4
```