Polynomial extensions

1. Make a constructor that accepts string arguments, like "2x^3 + 4x + -4"
2. Change the map to accept Double coefficients. Use DecimalFormat to format the output.
3. Don’t use a Map. Make a Term class. Store it in a HashSet private HashSet<Term> poly;

142 class Term   
143 {  
144 public int power; //public is easier to access!  
145 public int coef;

Polynomial with Calculus

1. Change the map to accept Double coefficients. Use DecimalFormat to format the output.
2. Make a constructor that accepts string arguments, like "x^3 + x^2 - 8x" or "sin(x)" or "e^x"
3. Write new methods to produce the following output:

Derivative(Poly): 6x^2-4  
Integral(Poly): 0.5x^4-2x^2+2x  
Roots of Poly: [-1.618033988749, 0.6180339887498, 1.0] //Newton-Raphson Method  
  
Taylor Polynomial of e^x: 0.0000027557x^9+0.0000248016x^8+0.0001984127x^7+  
0.0013888889x^6+0.0083333333x^5+0.0416666667x^4+0.1666666667x^3+0.5x^2+x+1

Taylor Polynomial of sin(x): -0.000000009x^19-0.0000000035x^17-0.0000000005x^15+0.0000000005x^13-0.000000025x^11+0.0000027557x^9-0.0001984127x^7+0.0083333333x^5-0.1666666667x^3+x

Taylor Polynomial of e^x\*sin(x): -0.000000000x^24-0.0000000004x^23-0.0000000015x^22-0.0000000047x^21-0.0000000097x^20-0.0000000109x^19-0.0000000035x^18-0.0000000037x^17-0.0000000006x^16-0.0000000024x^15+0.0000000029x^14+0.0000000339x^13-0.000000025x^12+0.000000526x^11+0.0000088183x^10+0.0000440917x^9+0x^8-0.0015873016x^7-0.011111111x^6-0.0333333333x^5+0.3333333333x^3+x^2+x

Approximate integral of e^x\*sin(x): -0.0000000002x^22-0.0000000005x^21-0.0000000005x^20-0.0000000002x^19-0.0000000002x^18-0x^17-0.000000000x^16+0.0000000002x^15+0.0000000024x^14-0.0000000019x^13+0.0000000438x^12+0.0000008017x^11+0.0000044092x^10+0x^9-0.0001984127x^8-0.0015873016x^7-0.0055555556x^6+0.0833333333x^4+0.3333333333x^3+0.5x^2

Approximate derivative of e^x\*sin(x): 0.0000000003x^24-0.0000000018x^23-0.0000000089x^22-0.000000034x^21-0.0000000988x^20-0.000000194x^19-0.0000002066x^18-0.0000000638x^17-0.0000000622x^16-0.0000000099x^15-0.0000000357x^14+0.0000000406x^13+0.00000044x^12-0.0000003006x^11+0.000005787x^10+0.0000881834x^9+0.0003968254x^8+0x^7-0.011111111x^6-0.0666666667x^5-0.1666666667x^4+x^2+2x+1  
  
Poly4: x^3+x^2-8x  
Poly4's maximum value on [-3,2] is 12.0 at x=-2.0  
Poly4's minimum value on [-3,2] is -6.518518518518519 at x=1.333333333333333