Unit 4 – Polynomial Review

1. Find the ***exact*** roots of the following polynomial equations:

   a) $3x^4 - 7x^3 - 3x^2 - 7x - 6 = 0$

   b) $x^4 - 2x^3 - 14x^2 + 12x + 48 = 0$

   c) $0 = x^4 + 3x^2 - 4$

2. Is $(x + 3)$ a factor of $f(x) = -2x^4 + 3x^3 - 4x^2 + x - 3$? How do you know?

3. Show whether -4 is a zero of $g(x) = x^3 - x^2 - 14x + 24$.

4. Find the factored and standard form equation for a 4th degree polynomial that has a scale factor of 2 and a double root at 3 and a root at -2 + 3*i*.

Identify the type of function for each problem. Then answer the follow up question.

5. Type of Function: _____

6. What is the rate of change for this function?
   _____

x	f(x)
1	2
2	-3
3	-20
4	-55
5	-144
6	-203
7	-328

7. Type of Function: _____

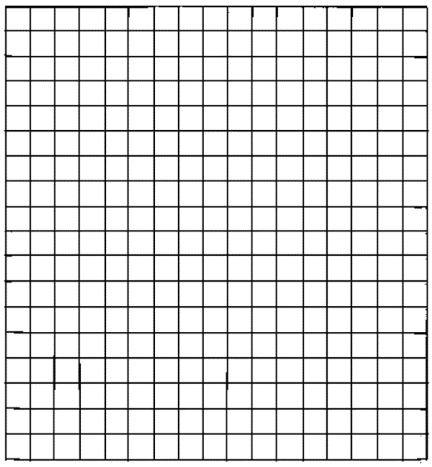
8. Explicit equation of Function: _____

x	f(x)
3	23
4	30
5	37
6	44
7	51
8	58
9	65

x	f(n)
1	-3
2	3
3	11
4	21
5	33
6	47

9. Type of Function: _____

10. Recursive formula:
    _____

11.	**Function (in factored form)** **Function (in standard form)** **End Behavior:** $as\ x \to -\infty,\quad f(x) \to$_____ $as\ x \to \infty,\quad f(x) \to$_____ **Roots: -3, 7, 4** **Value of leading co-efficient: 3** **Degree: 3**	Sketch a graph: 
Workspace		
12.	**Function (in factored form)** **Function (in standard form)** **End Behavior:** $as\ x \to -\infty,\quad f(x) \to$_____ $as\ x \to \infty,\quad f(x) \to$_____ **Roots:** -4, 2$i$ **Value of leading co-efficient: 1** **Degree: 3**	Sketch a graph.