

Math 342 - Divided Differences

Name: _____

1. Complete the following table of divided differences.

x	$f(x)$	1st DD	2nd DD	3rd DD
-3	3			
		-2		
-1	-1			
		1		
0	0			
		19		
2	38			

2. Use the previous result to find the interpolating polynomial for the points $(-3, 3)$, $(-1, -1)$, $(0, 0)$, $(2, 38)$ written in any form.
3. Make a table of divided differences to find the interpolating polynomial that passes through $(-1, -6)$, $(1, 0)$, and $(2, 6)$.
4. Expand the interpolating polynomial from the last problem into the form $ax^2 + bx + c$ (i.e., convert from the Newton basis to the standard basis).

5. Let $f(x) = 10^x$. Find a 3rd degree interpolating polynomial for f at the nodes $\{-1, 0, 1, 2\}$ by making a table of divided differences.