6) Divided differences.

Ex. a) Complete the divided difference table

x	$f(x)$	I DD	II DD	III DD	IV DD	V DD
1.0	0					
1.1	1	10				
1.2	2.5	15	25			
1.3	3.5	10	-25	$-\frac{500}{3}$		
1.4	4	5	-25	0	$\frac{1250}{3}$	
1.5	5.5	15	50	250	625	$\frac{1250}{3}$

b) Write down the Newton's interpolating polynomial at the points 1, 1.1, 1.2, ..., 1.5.

$$P_5(x) = 0 + 10(x-1) + 25(x-1)(x-1.1)$$

$$- \frac{500}{3}(x-1)(x-1.1)(x-1.2) + \frac{1250}{3}(x-1)(x-1.1)(x-1.2)(x-1.$$

$$+ \frac{1250}{3}(x-1)(x-1.1)(x-1.2)(x-1.3)(x-1.4)$$

c) If you were to approximate $f(1.28)$ which 2nd degree polynomial will you use?