

The closest 3 points are 1.2, 1.3, 1.4

$$P_2(x) = 2.5 + 10(x-1.2) - 25(x-1.2)(x-1.3)$$

7) Hermite interpolation

Ex. Let $f(x) = x^7$

(a) Compute the fifth divided difference $f[0, 1, 1, 1, 2, 2]$ by completing the table below.

x	f(x)						
0	0						
1	1	1					
1	1	7	6				
1	1	7	21	15			
2	128	127	120	99	42		
2	128	448	321	201	102	30	

(b) Write down the Hermite polynomial interpolating $f(x)$ at the points 0, 1, 1, 1, 2, 2.

$$H(x) = 1 \cdot x + 6x(x-1) + 15x(x-1)^2 + 42x(x-1)^3 + 30x(x-1)^3(x-2)$$