3)

x	y	1st	2nd	3rd	4th	5th
-2	39					
		$F[-2\ -1] = \frac{3-39}{-1+2} = -36$				
-1	3		$F[-2\ -1\ 0] = \frac{-4+36}{0+2} = 16$			
		$F[-1\ 0] = \frac{-1-3}{0+1} = -4$		-5		
0	-1		$F[-1\ 0\ 1] = \frac{-2+4}{1+1} = 1$		1	
		$F[0\ 1] = \frac{-3+1}{1} = -2$		-1		0
1	-3		$F[0\ 1\ 2] = -2$		1	
		$F[1\ 2] = \frac{-9+3}{2-1} = -6$		3		
2	-9		$F[1\ 2\ 3] = 7$			
		$F[2\ 3] = 8$				
3	-1					

(1)

$P_5(x) = 39 - F[-2\ -1](x+2) - F[-2\ -1\ 0](x+2)(x+1) + F[-2\ -1\ 0\ 1](x+2)(x+1)(x+0) + F[-2\ -1\ 0\ 1\ 2](x+2)(x+1)(x-0)(x-1) + F[-2\ -1\ 0\ 1\ 2\ 3](x+2)(x+1)(x-0)(x-1)(x-2)$

$= 39 - 36(x+2) + 16(x+2)(x+1) - 5(x+2)(x+1)(x-0) + 1(x+2)(x+1)(x-0)(x-1) + 0$

$= x^4 - 3x^3 - 1$