3b

x_i	$f[\,]$	$f[\,,\,]$	$f[\,,\,,\,]$	...
0	e^0	$\frac{e^1-e^0}{1-0} = e-1$	$\frac{(e^2-e)-(e-1)}{2-0} = \frac{e^2-2e+1}{2}$	
1	e^1	$\frac{e^2-e^1}{2-1} = e^2-e$	$\frac{(e^3-e^2)-(e^2-e)}{3-1} = \frac{e^3-2e^2+e}{2}$	
2	e^2	$\frac{e^3-e^2}{3-2} = e^3-e^2$	... $f[\,,\,,\,,\,]$	
3	e^3		$\frac{1}{6}\left(e^3-2e^2+e-e^2+2e-1\right) = \dots$	

$$\dots = \frac{1}{6}\left(e^3-3e^2+3e-1\right)$$