$$\text{sum} = \quad v_1'(1+\eta_N) + v_2'(1+\eta_{N-1}) + \ldots + v_n'(1+\eta_1) \quad = v_1(1+\eta_{N+1}) + v_2(1+\eta_N) + \ldots + v_N(1+\eta_2) \quad = (a_1 + \alpha_1$$