Solu□ie:

1. $f(0)+f(1)+f(2)+f(3)=-3-1+2+1=-1.$

2. a) $\Delta=m^2-4m+16>0, \forall m\in\mathbb{R}\Rightarrow x_1,x_2\in\mathbb{R}, x_1\neq x_2$.

$G_f\cap Ox=\{A(x_1,0),B(x_2,0)\}$; $d(A,B)=|x_2-x_1|\geq 4.$ Deci : $|x_2-x_1|\geq 4\Leftrightarrow(x_2-x_1)^2\geq 16\Leftrightarrow$

$\Leftrightarrow S^2-4P\geq 16\Leftrightarrow m^2-4m+16\geq 16\Leftrightarrow m^2-4m\geq 0\Rightarrow m\in(-\infty,0]\cup[4,\infty)$.

b) $f(x)=x^2-4x$. Axa de simetrie este dreapta de ecuație: $x=-\dfrac{b}{2a}\Rightarrow x=2$.

3. $V\left(-\dfrac{b}{2a},-\dfrac{\Delta}{4a}\right)\Rightarrow V\left(\dfrac{a+1}{2},-\dfrac{(a+1)^2-8}{4}\right)\in d: y=x\Leftrightarrow\dfrac{a+1}{2}=-\dfrac{(a+1)^2-8}{4}\Leftrightarrow a\in\{-5;1\}$.

4. a) Condiție de existență: $x>0$; $\log_2 6x=\log_2(3x+6)\Leftrightarrow 6x=3x+6\Leftrightarrow x=2$.

b) $2^{\sqrt{x^2+2}}=2^{1-x}\Leftrightarrow\sqrt{x^2+2}=1-x\wedge 1-x\geq 0\Rightarrow x^2+2=1-2x+x^2\Rightarrow x=-\dfrac{1}{2}$.