$a^2+2a=a^2-4 \Rightarrow \boxed{a=-2}$

$4+b=2 \Rightarrow b=-1 \Rightarrow 2=\frac{x^2+a}{2x+1} \Rightarrow \frac{4+a}{3}=2 \Rightarrow a=11$

$\Rightarrow f(x)=\frac{x^2+11}{2x+1} \Rightarrow f(1)=\frac{1+11}{2+1}=\boxed{4}$

$\begin{cases} 2-a+b=0 \\ c+4a+b=0 \end{cases} \Rightarrow 5a=0 \Rightarrow a=-4 \Rightarrow b=-8$

$\Rightarrow f(x)=\frac{4x+1}{2x^2-4x-8} \Rightarrow f(1)=\frac{5}{2-4-8}=\frac{-5}{12}$

$-4x^2+ax+b=-4(x+1)^2=-4(x^2+2x+1)=-4x^2-8x-4$

$\Rightarrow a=-8, b=-4 \Rightarrow a+b=-12$

$\begin{cases} x^2+mx+1=(x-1)^2=x^2-2x-1 \Rightarrow m=-2 \\ \Delta<0 \rightarrow m^2-4<0 \Rightarrow m^2<4 \Rightarrow -2<m<2 \end{cases} \Rightarrow -2 \leq m < 2$

$x^2 \neq 0 \Rightarrow x \neq 0$

$4-\frac{1}{x^2} \geq 0 \Rightarrow \frac{1}{x^2} \leq 4 \Rightarrow 1 \leq 4x^2 \Rightarrow x^2 \geq \frac{1}{4} \Rightarrow x \geq \frac{1}{2}$

$\Rightarrow x \leq -\frac{1}{2}$

$\Rightarrow D=\mathbb{R}-\left(-\frac{1}{2}, \frac{1}{2}\right)$

$D=\mathbb{R} \Rightarrow mx^2+2mx+1 \geq 0 \Rightarrow m \geq 0$

$\Rightarrow \Delta \leq 0 \Rightarrow 4m^2-4m \leq 0 \rightarrow$

	0		1	
σ	+	0	−	0

$\Rightarrow m \in [0,1]$

$$2 = 2 + k \Rightarrow k = 0$$

$$2x - 1 \neq 0 \Rightarrow x \neq \frac{1}{2} \Rightarrow a = \frac{1}{2}$$

$\Big\} \Rightarrow a + k = \frac{1}{2}$

$$\xrightarrow{x=1} \frac{9-4}{2+2} = 2 + b \Rightarrow 1 = 2 + b \Rightarrow b = -1$$

$$\Rightarrow 2\left(\frac{-2}{2}\right) - 2 = 2\left(\frac{-2}{2}\right)a + 2 \Rightarrow -4 = -2a + 2 \Rightarrow a = 3$$

$\Big\} a - b = \boxed{4}$

$$4 = 2a^2 + 2a \Rightarrow 2(a^2 + a - 2) = 0 \Rightarrow \boxed{a = 1}$$

$$\Rightarrow \boxed{a = -2}$$