۱۱ $x=a: \quad a^2+2a=a^2-4 \to 2a=-4 \to a=-2$

۱۲ $f(2)=3 \to \frac{4+a}{4-b}=3 \to 4+a=12-3b \to 4+\underbrace{a}_{11}=\frac{12+3}{15}$

$g(1)=4 \to 4+b=3 \Rightarrow b=-1$

$\Rightarrow f(a)=\frac{2^2+11}{2a+1}=\frac{1+11}{2+1}=\frac{12}{3}=4$

۱۳ ① $f(x)=\frac{4x+1}{(2x-1)(x+1)} \to 2x^2-9x-5$

② $f(x)=\frac{4x+1}{(2x+2)(x-4)} \to 2x^2-9x-5$

$\Rightarrow a=-9,\ b=-5$

$\Rightarrow f(1)=\frac{4+1}{2-9-5}=\frac{5}{-12}=\frac{-5}{12}$

۱۴ $-(2x+2)^2=-(4x^2+4+8x)=-4x^2-8x-4 \quad \underbrace{-8}_{a}x\ \underbrace{-4}_{b} \Rightarrow a+b=-8-4=-12$

۱۵ $\Delta<0 \Rightarrow m^2-4<0 \quad m^2<4 \to -2<m<2$

if $m=-2 \to x^2-2x+1=0 \to \underbrace{(x-1)}_{1}^2=0 \Rightarrow -2<m<2=[-2,2)$

۱۶ ① $\to 4-\frac{1}{2^2}>0 \to 4>\frac{1}{2^2} \to 4x^2>1 \to x^2>\frac{1}{4} \to \frac{1}{2}<x$, $\frac{-1}{2}>x$

② $x^2\neq 0 \to x\neq 0 \quad$ ①,② $\Rightarrow x\in(-\infty,\frac{-1}{2}]\cup[\frac{1}{2},+\infty)$

۱۷ $mx^2+2mx+1=0$

① $m=0 \to 1>0$

② $m\neq 0 \to \Delta<0 : (2m)^2-4(1\times m)=4m^2-4m<0$

$4(\underbrace{m}_{0}(\underbrace{m-1}_{1}))<0 \quad \overset{0}{\ominus}\ \overset{1}{\oplus} \to m\in[0,1]$

$x=\frac{1}{2} \rightarrow 2\left(\frac{1}{2}\right)+1=4\left(\frac{1}{2}\right)+k \Rightarrow \underline{k=0}$ ۱۸

$2x+1=\frac{4x^2-1}{2x-1} \Rightarrow 4x^2-1=4x^2-1$

$2(x)-1\neq 0 \rightarrow 2x\neq 1 \rightarrow x\neq\frac{1}{2} \Rightarrow \boxed{a=\frac{1}{2}}$ $a+k=0+\frac{1}{2}=\underline{\frac{1}{2}}$

$x=\frac{-2}{3}$: $3a\left(\frac{-2}{3}\right)+2=-2a+2=-2+b \rightarrow \underbrace{2a+b=4}_{-2}$ ۹

$(3x+b)(3x+2)=9x^2-4 \Rightarrow \boxed{b=-2} \Rightarrow 2a-2=4 \Rightarrow \underline{a=3}$

$a-b=3-(-2)=\underline{5}$

$x=2$: $2+2=2a^2+2a \rightarrow 2a^2+2a-4=0 \quad a^2+2a-8=0$ ۱۰

$\underbrace{(a+4)}_{-4}\underbrace{(a-2)}_{2}=0 \rightarrow \frac{-4}{2}=\underline{-2}, \frac{2}{2}=\underline{1}$