زهرا ابجدی منش - گروه A - تکلیف ۲۸

$a^2+2a=a^2-4 \to 2a=-4 \to a=-2$ (1)

$g(x)=2x+b \xrightarrow[g=3]{x=2} 4+b=3 \to b=-1 \to g(x)=2x-1$ (2)

$f(x)=\frac{x^2+a}{2x-b}=\frac{x^2+a}{2x+1} \xrightarrow[y=3]{x=2} \frac{4+a}{4+1}=3 \to \frac{4+a}{5}=3 \to a=11$

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

$2x^2+ax+b \to x=-1 \quad 2-a+b=0 \quad b-a=-2$ (3)

$\quad\quad x=4 \quad 32+4a+b=0 \quad b+4a=-32$

$\to b+4a-b+a=5a=-30 \quad a=-6 \quad b=-2+a \quad b=-8$

$\to f(x)=\frac{4x+1}{2x^2-6x-8} \to f(1)=\frac{-5}{12}$

$x=-1 \to -4-a+b=0 \to b-a=4 \to b=4+a$ (4)

$-4x^2+ax+b \xrightarrow{\Delta=0} a^2+16b=0 \to a^2+16a+64=0 \to (a+8)^2=0$

$\to a=-8 \to b=-4 \quad a+b=-12$

$\Delta<0 \to m^2-4<0 \to (m-2)(m+2)<0 \to \underset{+\ \ -\ \ +}{\overset{-2\ \ \ 2}{\quad}} \to (-2,2)$ (5)

$4-\frac{1}{x^2}\geq 0 \to 4\geq\frac{1}{x^2} \to \frac{4x^2}{x^2}\geq\frac{1}{x^2} \to 4x^2\geq 1 \to x^2\geq\frac{1}{4}$ (6)

$\to x\geq\frac{1}{2}$ یا $x\leq-\frac{1}{2} \quad [\frac{1}{2},+\infty)\cup(-\infty,-\frac{1}{2}]$

$\Delta=4m^2-4m=4m(m-1) \to \underset{+\ \ -\ \ +}{\overset{0\ \ \ 1}{\quad}} \quad \Delta<0, \ m>0 \ \Big\} \ (0,1]$ (7)

$x=\frac{1}{2} \to 1+1=2+k \to k=0$ (8)

$2a-1=0 \to a=\frac{1}{2}$

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

$x=-\frac{2}{3} \to -2a+2=-2+b \to b+2a=4 \xrightarrow{b=-2} 2a=6 \quad a=3$ (9)

$x=1 \to \frac{9-4}{3+2}=1=3+b \to b=-2$

$a-b=3+2=5$

$x=2 \to 2a^2+2a=4 \to a^2+a-2=0 \to (a+2)(a-1)=0$ (10)

$a = 1, -2$