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نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

۱

$f(a) = a^2 + 2a = a^2 - 4$

$\Downarrow$

$2a = -4 \Rightarrow a = -2$

۲

$x=2 \quad g(2) = 4 + b = 3 \Rightarrow b = -1$

$f(2) = \frac{4+a}{4-b} = 3 \rightarrow \frac{4+a}{5} = 3 \Rightarrow a = 11$

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

۳

$f(-1) = \frac{-4+1}{2-a+b} \notin \mathbb{R} \Rightarrow -a+b = -2$

$f(4) = \frac{16+1}{32+4a+b} \notin \mathbb{R} \Rightarrow 4a+b = -32$

$\xrightarrow{\ominus} 5a = -30 \Rightarrow a = -6 \Rightarrow b = -8$

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

۴

$f(-1) = \frac{-1-\sqrt{2}}{-2-a+b} \notin \mathbb{R} \quad -a+b = 4 \quad a-b = -4$

$-2x^2 + ax + b = 0 \rightarrow x = -1 \Rightarrow \Delta = a^2 + 16b = 0$

$\downarrow$

$x = \frac{-a \pm \sqrt{0}}{-8} = -1 \Rightarrow a = -8$

$64 + 16b = 0 \Rightarrow b = -4 \Rightarrow a + b = -8 - 4 = -12$

۵

$f(1) = \frac{2}{(0)(2+m)}$

$x^2 + mx + 1 = 0 \rightarrow x = 1 \rightarrow 1 + m + 1 = 0 \Rightarrow m = -2$

$\rightarrow x \notin \mathbb{R} \rightarrow \Delta < 0 \rightarrow m^2 - 4 < 0 \Rightarrow m = (-2, 2)$

$m = \{-2\} \cup (-2, 2) = [-2, 2)$

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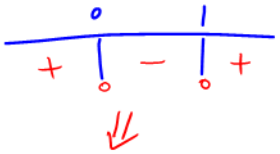
۶

$$۴-\frac{۱}{x^۲}=۰ \Rightarrow \frac{۱}{x^۲}=۴ \Rightarrow x^۲=\frac{۱}{۴} \Rightarrow x=\pm\frac{۱}{۲} \Rightarrow D_f=\{-\frac{۱}{۲}\},\{+\frac{۱}{۲}\}$$

۷

$$mx^۲+۲mx+۱=۰ \longrightarrow x\notin\mathbb{R} \rightarrow \Delta<۰ \rightarrow ۴m^۲-۴m<۰ \rightarrow ۴m(m-۱)<۰$$



$$m=(۰,۱)$$

۸

$$g(\tfrac{۱}{۲})=۱+۱=۲ \quad f(\tfrac{۱}{۲})=۲=۴(\tfrac{۱}{۲})+k \Rightarrow k=۰$$

$$\xrightarrow{a\neq\frac{۱}{۲}} \frac{۴(\frac{۱}{۲})^۲-۱}{۲(\frac{۱}{۲})-۱}\neq۲ \quad \not\Rightarrow \Rightarrow a=\frac{۱}{۲} \Rightarrow a+k=\frac{۱}{۲}$$

۹

$$g(-\tfrac{۲}{۳})=۲(-\tfrac{۲}{۳})+b \overset{f}{=} (-\tfrac{۲}{۳})=-۲a+۲ \qquad g(۱)=۲+b=f(۱)=\frac{۹-۴}{۲+۲}=۱ \Rightarrow b=-۲$$

$$\longrightarrow -۲+b=-۲a+۲ \xrightarrow{b=-۲} -۴=-۲a+۲ \Rightarrow a=۳ \Rightarrow a-b=۳-(-۲)=۵$$

۱۰

$$g(۲)=۲+۲=۴=f(۲)=۲a^۲+۲a=۲a(a+۱)$$

$$\Rightarrow a(a+۱)=۲ \Rightarrow a=\{-۲\},\{۱\}$$