۱۴٫۵

۱- اسم و فامیل را در صفحه ی اول بنویسید!

(۲)

$f(x) = x^2 + 2x + 1 + 9x^2 - 4x + 1 + mx^2 + nx + mn$

$10x^2 \to m = -10$, $n = +2$

$g(2) = m = p + 1 \to p + 1 = -10$ [redacted] $\to p = -11$

$g(-9) = -1 , p + k$

$p + k = -1 \to k = 10$

$m + n + p + k = -7$ ✓

۲- (۲)

الف) $\dfrac{x-2}{(x^2-4)(x^2+x)}$, $(x-2)(x+2)$ $\to$ -2 , 2 : $- \;\; + \;\; +$ $\to$ $D_f = (-2, +\infty) - \{2\}$ ✓

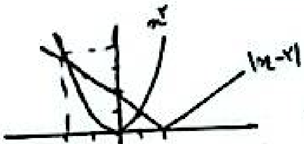
ب) $4 - 2[-x] \neq 0 \to [-x] \neq 2 \to 2 \leq -x < 3 \to -3 < x \leq -2 \to \mathbb{R} - (-3, -2]$ ✓

۳- (۱٫۷۵)

الف) $f(x) = \dfrac{\sqrt{x(x^2-1)}}{\sqrt{|x|+x}}$, $x > 0$ $\to x(x-1)(x+1) \to$ -1 , 0 , 1 : $- + - +$ $\to D_f = [1, +\infty)$ ✓

.۷۵

ب) $f(x) = \dfrac{\sqrt{|x-2| - x^2}}{|x| - 1}$ $\to |x-2| \geq x^2 \to$

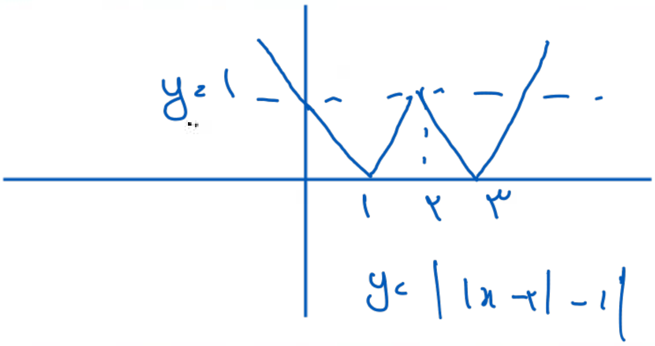


$\to [-2, 1] \to D_f = [-2, 1)$

$|x| - 1 \to x \neq \pm 1$

$D_f = [-2, 1) - \{-1\}$ ، $x = -1$ در بازه‌ی دامنه نیست

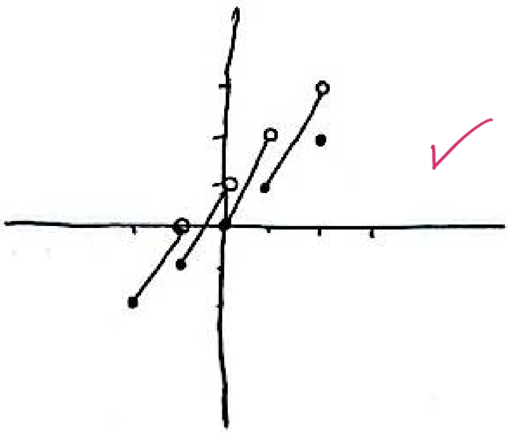
۴- صفر



$|k| = 1 \to$ معادله ۳ جواب خواهد داشت.

۵- (۲)

$$\begin{cases} 2x - 1 & 1 \leq x < 2 \\ 2x & 0 \leq x < 1 \\ 2x + 1 & -1 \leq x < 0 \\ 2x + 2 & -2 \leq x < -1 \end{cases}$$



✓

۶- $f(x) = x\cdot\frac{x^2-3x+2}{x+a}+b = \frac{(x-2)(x-1)}{x+a}+b$ → $a=-2 \to b=1 \to a-b=-3$; $a=-1 \to b=3 \to a-b=-4$

②

۷- $f(x)\begin{cases}\frac{x^3+2x^2-x-2}{x^2-1} = \frac{x(x^2-1)+2(x^2-1)}{x^2-1} = \frac{(x^2-1)(x+2)}{x^2-1} = x+2 = g(x) = x+c \to c=2 \\ \frac{ax+4}{x+b} \xrightarrow{x+2 \to 3,\ x \to 1} \frac{a+2}{b+1} = 3 \to 3b+3 = a+2\end{cases}$

$\to 4 = 4b+2 \to 4b = 2 \to b = \frac{1}{2}$

$\frac{2-a}{b-1} = 1 \to b-1 = 2-a \to a = \frac{5}{2}$

$b+c = \frac{5}{2}$

②

۸- $3f(1) = 3\sqrt{k-3a}+2k-2$; $g(1) = \sqrt{b-4}+3k$ → $3\sqrt{k-3a}+2k-2-\sqrt{b-4}-3k = k$

$2\sqrt{k-3a}-2-\sqrt{b-4} = 2k$

$D_f = [\frac{3a}{4}, +\infty)$

$D_g = (-\infty, \frac{b}{4}]$ → $\frac{3a}{4} = \frac{b}{4} = 1$ → $b=4$, $a=\frac{4}{3}$

$3f(1)-g(1) = k \to k=-1$

$3(\frac{4}{3}) - \frac{4}{3} - (-1) = 3$

۱/۵

۹- $g(x) = \sqrt{2x+2} \to x \geq -1$

$f(x) = \sqrt{m-x} \to x \leq m$ → $D_{f+g} = [-1, 7] \to m=7$

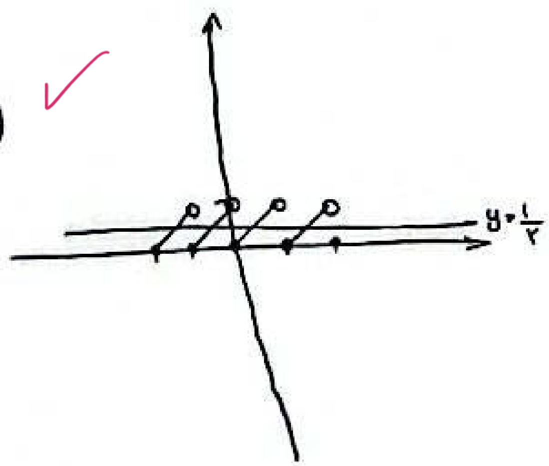
②

$f(2) = 2+n$; $g(2) = \sqrt{8}$ → $f-g(2) = 2+n-\sqrt{8} = 4\sqrt{2}$ → $n = 8\sqrt{2}-2$ → $m+n = 8\sqrt{2}+5$

۱۰- $y = (-1)^{2}(x-[x]) = \frac{1}{2}$, $y = x-[x] = \frac{1}{2}$

②

نقاط برخورد = ∞ تا جواب



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