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Year: Month: Date: ( ) Subject: نسبت و تناسب

۱۰- ۲

$f(x) = \{(2,3)(1,2)(1,4)(4,1)(5,2)\}$

$g(x) = \{(10)(3,1)(-1,4)(-2,-2)(-3,-1)\}$

الف) $f - g = \{(2,2)(1,4)(3,2)\}$

ب) $\frac{f}{g} = 2f\{(2,2)(\frac{7}{2},4)(1,8)(3,2)(5,4)\}$

$\rightarrow \{(2,2)(1,\frac{8}{5})(3,-2)\} \longrightarrow \{(2,4)(3,-2)\}$

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$f(x) = \{(2,1)(3,4)(-5,2)(1,-1)\}$

الف) $2f(x) = \{(2,2)(3,8)(-5,4)(1,-4)\}$

ب) $f(x)+1 = \{(2,2)(3,5)(-5,3)(1,-1)\}$

ج) $3f^2(x)+1 = 3f^2(x) = \{(2,3)(3,48)(-5,12)(1,12)\}$

$\rightarrow \{(2,4)(3,49)(-5,13)(1,13)\}$

د) ~~$f(2a) = \{(2,2)(3,8)(-5,4)(1,-4)\}$~~

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$f(x) = \{(2,5)(1,-4)(0,2)(7,1)\}$

$g(x) = \sqrt{9-x^2} \quad -3 < x < 3 \quad \{(2,\sqrt{5})(1,2\sqrt{2})(0,3)\}$

الف) $\frac{f}{g} = \{(2,0)(1,-\sqrt{2})(0,\frac{2}{3})\}$

ب) $\frac{g}{f} = \{(2,\frac{\sqrt{5}}{2})(5,-\frac{\sqrt{5}}{2})(1,\text{تعریف نشده})\} \rightarrow \{(\frac{1}{2},0)(0,-\frac{1}{3})(1,0)\}$

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$g(x-\frac{1}{x}) = \frac{x^4+1}{x^2}$ $\quad x-\frac{1}{x} = -3$ بدون ریشه $\quad \frac{x^4+1}{x^2} - 2 = 0 \Rightarrow x = 1$

$f(-3) = 11$

$= \left(\frac{x^4+1}{x^2} = 11\right.$

$\frac{x^4+1}{x^2} = 11$

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$f(x)=\frac{x^2+4x+a}{x^2+2x+b}$

$f(\sqrt{2}-1)=\frac{(\sqrt{2}-1)^2+4(\sqrt{2}-1)+a}{(\sqrt{2}-1)^2+2(\sqrt{2}-1)+b}\cdot\frac{7-4\sqrt{2}+4\sqrt{2}-8+a}{7-4\sqrt{2}+2\sqrt{2}-2+b}=\frac{4}{6}\cdot\frac{2}{3}$

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$f(x)=ax^2-bx+2$ $\quad f(x-1)-f(x)=6x+2\Rightarrow$

$a(x-1)^2-b(x-1)+2-ax^2+bx-2=6x+2$

$f(x-1)-f(x)=6x+2$ $\quad ax^2+a-2ax-bx+b+2+ax^2+bx-2=6x+2$

$a+b-2ax=6x+2$ $\quad a+b=2$

$-2ax=6x$ $\quad -2+b=2\Rightarrow b=4$

$-2a=6$

$a=-3$

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$f(x)=\begin{cases}x-\sqrt{x+2} & x>2\\ 2x+2 & x\le 2\end{cases}$

$f(f(0))+f(f(1))=?$

$f(0)=2$ $\quad f(1)=4$

$f(2)=6$ $\quad f(4)=2$

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$f(x)-2f(2)=x^2-2x+2$

$f(-2)$

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

$-f(2)=2\rightarrow f(2)=-2$

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

$f(-2)=10$

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۲- $y = \sqrt{\frac{-x}{f(x)}}$ $\frac{-x}{f(x)} \geq 0$ (۲)

ریشه‌ها: $-3, 0, 2, 5$ — $x=0$ و $x=2$ دوبار ریشه ناظر می‌شود

-3		0		2		5
	+		+		−	

$[-3, 0] \cup [2, 5]$

۱- $y = \sqrt{xf(x)}$ $xf(x) \geq 0$ (۲)

-4		-2		0		2		5
	+		−		+		−	

$[-4, -2] \cup [0, 2]$