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

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ب) $y=\frac{x+3}{x^3-x^2-8x-6}$

$x^3-x^2-8x-6=0$

$3-1-8-6$

$3\quad 2\quad 1\quad 6$

$2\quad 1\quad 3\quad 0$

$x^2+2x+3=0$

$\Delta=4-12<0$

$x=-1$

x^2-2x-6

$x=\frac{2\pm\sqrt{4+24}}{2}=\frac{2\pm\sqrt{28}}{2}=1\pm\sqrt{7}$

$D_f=\mathbb{R}-\{-1,1-\sqrt{7},1+\sqrt{7}\}$

الف) $y=\frac{x+4}{4x^3-20x^2+31x-15}$

$4-20+31-15=0$

$4\quad -20\quad 31\quad -15$

$\frac{3}{2}\quad 4\quad -14\quad 10$

$4x^2-14x+10=0$

$2(2x^2-7x+5)=0$

$2(x-1)(2x-5)=0$

$x=1,\ \frac{5}{2}$

$D_f=\mathbb{R}-\{1,\frac{5}{2},\frac{3}{2}\}$

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ب) $y=\frac{x+2}{x-\sqrt{x^2-2x}}$

$x^2-2x\geq 0$

$x(x-2)\geq 0$

$x\leq 0 \quad x\geq 2$

$x-\sqrt{x^2-2x}\neq 0$

$\sqrt{x^2-2x}\neq x$

$x^2-2x\neq x^2$

$-2x\neq 0$

$x\neq 0$

$D_f=(-\infty,0]\cup[2,+\infty)$

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۳

ب) $y=\sqrt{\frac{x^2-4x+3}{1-x^2}}$

$1-x^2\neq 0$

$x\neq \pm 1$

$\frac{x^2-4x+3}{1-x^2}\geq 0$

$(x-1)(x-3)(1+x)(1-x)\geq 0$

$x\neq \pm 1$

$x\leq -1 \quad 1\leq x\leq 3$

$D_f=(-\infty,-1)\cup[1,3]$

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۴

ب) $y=\log(x^2-11x+24)+\sqrt{9-x^2}$

$x^2-11x+24>0$

$(x-3)(x-8)>0$

$x<3 \quad x>8$

$9-x^2\geq 0$

$x^2\leq 9$

$-3\leq x\leq 3$

$D_f=[-3,3)$

ج) $y=\log\frac{x^2-7x+12}{2-x}$

$\frac{x^2-7x+12}{2-x}>0$

$\frac{(x-3)(x-4)}{2-x}>0$

$2<x<3 \quad x>4$

$D_f=(2,3)\cup(4,+\infty)$

د) $y=\log(x^2-5x)+\sqrt{x^2-4}$

$x^2-5x>0$

$x(x-5)>0$

$x<0 \quad x>5$

$x^2-4\geq 0$

$x^2\geq 4$

$x\leq -2 \quad x\geq 2$

$D_f=(-\infty,-2]\cup(5,+\infty)$

ه) $y=\log\frac{x^2-3x+2}{x-1}$

$\frac{x^2-3x+2}{x-1}>0$

$\frac{(x-1)(x-2)}{x-1}>0$

$x>2 \quad 1<x<2$

$D_f=(1,2)\cup(2,+\infty)$

و) $y=\log(x^2-|x|-2)$

$x^2-|x|-2>0$

$|x|^2-|x|-2>0$

$(|x|-2)(|x|+1)>0$

$|x|>2$

$x<-2 \quad x>2$

$D_f=(-\infty,-2)\cup(2,+\infty)$

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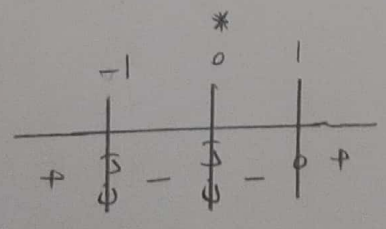
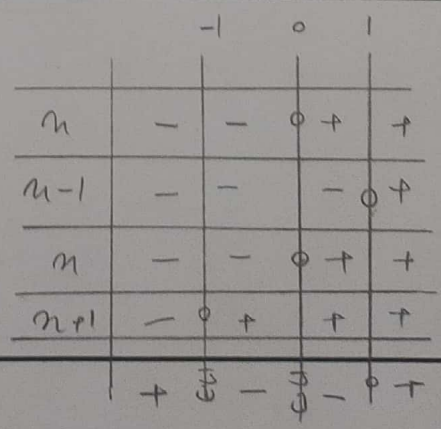
$y=\frac{x^2-x}{x^2+x}$

$x\neq 0 \quad x\neq -1$

$\frac{x(x-1)}{x(x+1)}$

$x\neq 0 \quad x\neq 1$





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$y = \sqrt{\frac{x - f(x)}{f(x)}}$ $\quad f(x) \neq 0$

$\frac{x - f(x)}{f(x)} \geq 0 \quad x - f(x) \geq 0$

$f(x) \leq x$

$[-1, 2] - \{0\}$

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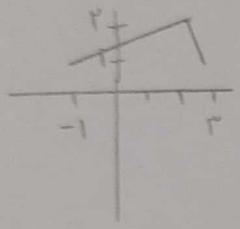
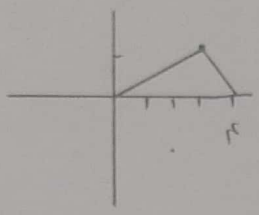
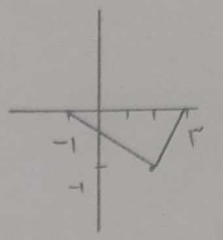
الف) $f(x)+1$



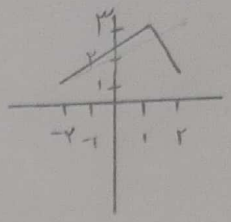
ب) $f(x-1)$



ج) $-f(x)$



د) $f(x+1)+2$



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$\begin{cases} f(x) = \sqrt{x^2 - 2x} \\ g(x) = \sqrt{x}\sqrt{x^2 - 2} \end{cases}$

$x^2 - 2x \geq 0$

$x(x^2 - 2) \geq 0$

$x^2 - 2 = 0$

$x^2 = 2$

$x = \pm\sqrt{2}$

$-\sqrt{2} \quad 0 \quad +\sqrt{2}$

$- \; + \; - \; +$

$[-\sqrt{2}, 0] \cup [\sqrt{2}, +\infty)$

$\begin{cases} x \geq 0 \\ x^2 - 2 \geq 0 \rightarrow x^2 \geq 2 \end{cases}$

$x \geq \sqrt{2} \quad x \leq -\sqrt{2}$

$(-\infty, -\sqrt{2}] \cup [\sqrt{2}, +\infty)$

هیچ دو تابع مساوی نیست $\sqrt{2} \neq -\sqrt{2}$

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$\begin{cases} f(x) = [\sqrt{x} - [\sqrt{x}]] \quad x \geq 0 \quad [0, +\infty) \\ g(x) = \sqrt{x - |x|} \end{cases}$

$x - |x| \geq 0$

$|x| \leq x$

$|x| = x \quad [0, +\infty)$

$x \geq 0$

تابع‌ها یکسانند

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الف) $f(x) = \sqrt{x|x|}, \; g(x) = x$

$x|x| \geq 0 \quad x \geq 0 \quad [0, +\infty)$

این دو تابع برابرنیستند D_f و D_g در $\mathbb{R}$

ب) $f(x) = \frac{x}{|x|}, \; g(x) = \frac{|x|}{x}$

$|x| \neq 0 \quad x \neq 0$

$x \neq 0$

$\mathbb{R} - \{0\}$

این دو تابع برابرند $\mathbb{R} - \{0\}$

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