آینرش ۵ آبادی

۱)

$2x^2+y^2-4x+6y+k=0 \longrightarrow (x-2)^2+(y+3)^2=0$

x^2+x^2

$x^2+4-4x+y^2+9+6y \longrightarrow k=13$

۲)

$f(x)=\begin{cases} x^2+4x & ; x\geq a \\ 2x+a+2 & ; x\leq a \end{cases}$ $\quad f(1)=?$

$a^2+4a=2a+a+2 \longrightarrow a^2+a-2=0$

$(a+2)(a-1)$

$1+4=5 \quad f(1)=5$

$a=-2$ ق

$a>0 \to \boxed{a=1}$ ق

-۳

$f(x)=\begin{cases} 2x^2-b & ; |x+1|\geq 2 \\ a+3x & ; -3\leq x\leq -1 \end{cases}$ $\quad a+b=?$

$-4 \quad -2 \longrightarrow x=-3$

$\hookrightarrow 18-b=-9+a$

$|x+1|\geq 2 \longrightarrow x+1\leq -2 \quad \boxed{x\leq -3}$ یا

$x+1\geq 2$ یا

$\boxed{x\geq 1}$

$\underset{27}{\underline{18+9}}=a+b$

-۴

$y=\sqrt{6x-a}+\sqrt{b-3x}$

$6x-a\geq 0$

$\boxed{6x\geq a}$

$x\geq \frac{a}{6}$

$b-3x\geq 0 \quad \boxed{b\geq 3x}$

$\frac{b}{3}\geq x$

$\frac{a}{6}=\frac{b}{3}$

$\frac{b}{a}=\frac{1}{2}$

۵)

الف) $y=\sqrt{\frac{x+1}{|x-3|}}+\sqrt{\frac{6-x}{x^2+4x+4}}$

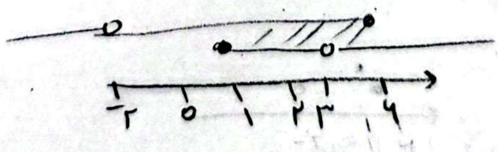
ب) $y=\sqrt{[x]-2}+\sqrt{2-[x]}$

الف) $\rightarrow \frac{x+1}{|x-3|}\geq 0$ $\quad x-1\geq 0$, $x\geq 1$ $\quad \frac{6-x}{(x+2)^2}\geq 0$

$R-\{3\}$ ✓

$-2 \quad 6$

$+ \quad + \quad -$



$[-1,6]-\{3\}$

ب) $[x]\geq 2 \longrightarrow 2\leq x$ $\quad \cap \longrightarrow 2\leq x<3$

$2\geq [x] \longrightarrow x<3$

(۹

الف) $y=\sqrt{\dfrac{x^2-x-6}{x^4-13x^2+36}} \rightarrow \dfrac{(x-3)(x+2)}{(x+2)(x-2)(x+3)(x-3)} \geq 0$

$x^4-13x^2+36 = (x^2-4)(x^2-9)$

$-3 \quad -2^{*} \quad 2 \quad 3^{*}$

ت ن ت ن ت ن ت ن

$+ \mid - \mid - \mid + \mid +$

$(-\infty,-3)\cup(2,+\infty)-\{3\}$

$x=3,-2,-3,2$
ت ن ت ن ت ن ت ن

ب) $y=\sqrt{\dfrac{x^3-2x^2-5x+6}{x^3+2x^2-5x-6}} \Rightarrow \dfrac{(x-3)(x+2)(x-1)}{(x+1)(x-2)(x+3)} \geq 0$

$x+1$

$3 \quad -2 \quad 1$

$-1 \quad 2 \quad -3$

$-3 \quad -2 \quad -1 \quad 1 \quad 2 \quad 3$

ت ن ت ن ت ن

$+ \mid - \mid + \mid - \mid + \mid - \mid +$

$x^3-2x^2-5x+6 \;\big|\; x-1$

$-x^3+x^2 \qquad\qquad x^2-x-6$

$-x^2-5x$

$+x^2-x$

$-6x+6$

$+6x-6$

$x^3+2x^2-5x-6 \;\big|\; x+1$

$-x^3-x^2 \qquad\qquad x^2+x-6$

x^2-x

$-6x-6$

$[3,+\infty)\cup[1,2)\cup[-2,-1)$
$\cup(-\infty,-3)$

(۲

الف) $y=\sqrt{[-x]-2}$ $\qquad [-x]\geq 2 \qquad -x\geq 2$
$x\leq -2$

ب) $y=\dfrac{5x^2+6}{[x]^2-2[x]-3}$

$([x]-3)([x]+1)$

$[x]\neq 3 \rightarrow R-[3,4)$
$\cup \quad R-[3,4)\cup(0,-1]$
$[x]\neq -1 \rightarrow R-(0,-1]$

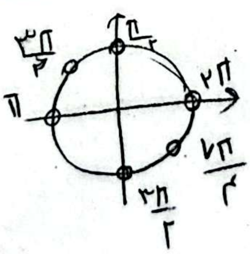
(۸

الف) $y=\dfrac{\cot x+1}{\tan x+1}$

$\sin\neq 0$

$\cos\neq 0$

$\tan x\neq -1$



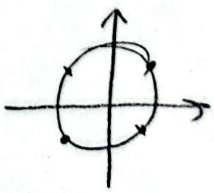
$D_f=(2k\pi+2\pi, 2k\pi+\frac{\pi}{2})\cup(\frac{\pi}{2},\frac{3\pi}{4})\cup(\frac{3\pi}{4},\pi)$
$\cup(\pi,\frac{3\pi}{2})\cup(\frac{3\pi}{2},\frac{7\pi}{4})\cup(\frac{7\pi}{4},2\pi)$

ب) ~~$y=\frac{\sqrt{2x\log(x-1)}}{\log_2 x^2 \ldots}$~~ $y=\sqrt{1-4\sin^2 x}$

$1-4\sin^2 x\geq 0$

$1\geq 4\sin^2 x$

$\frac{1}{4}\geq \sin^2 x \qquad -\frac{1}{2}\leq \sin x\leq \frac{1}{2}$



$[k\pi-\frac{\pi}{6}, k\pi+\frac{\pi}{6}]$

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۹)

$y=\sqrt{1-\log_{\frac{1}{2}}^{x-1}}$

$\log_{\frac{1}{2}}^{x-1} \geq 1$ $x-1 \leq \frac{1}{2}$

$\boxed{x \leq \frac{3}{2}}$

ب) $y=\dfrac{\sqrt{x^2-x}}{1-\log_{4}^{x^2-3x}}$ $x(x-1)\geq 0$

۰ ۱

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

①

$\log_{4}^{x^2-3x} \neq 1$

$x^2-3x \neq 4$ $x \neq \{4,-1\}$

$x^2-3x-4 \neq 0$

$(x-4)(x+1)\neq 0$ $R-\{4,-1\}$

① $\cap$ ② $\longrightarrow (-\infty,0]-\{-1\} \cup [1,+\infty)-\{4\}$

۱۰)

الف) $y=\sqrt{2^{4x-x^2}-8}$ $2^{4x-x^2} \geq 2^3$

$4x-x^2 \geq 3$

$x^2-4x+3 \leq 0$

$(x-3)(x-1)\leq 0$

$D=(-\infty,1]\cup[3,+\infty)$ ۱ ۳ $+ \;|\; - \;|\; +$

ب) $y=\left(\dfrac{3x+5}{2x+4}\right)!$

$\dfrac{3x+5}{2x+4}\in W$

$\dfrac{-4w+5}{2w-3}$

$\hookrightarrow D=\{x \mid x=\dfrac{-4k+5}{2k-3},\, k\in W\}$

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