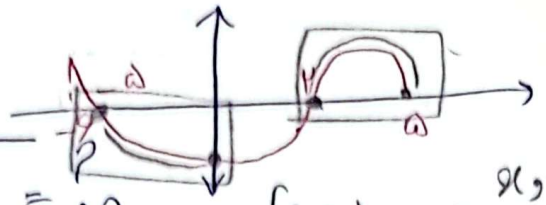
۱)

$y=f(x)$

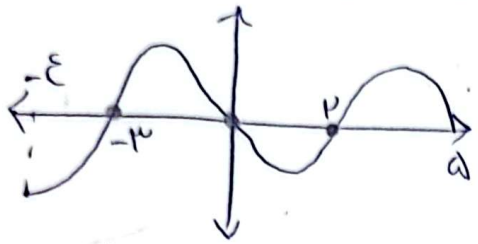


$y=\sqrt{x f(x)}$ = دامنه = ؟

$x f(x) \geq 0 \rightarrow \begin{matrix} x, f(x) \leq 0 \\ x, f(x) \geq 0 \end{matrix}$ x یا $f(x)=0$

$Dy=[-a,0]\cup[2,a]$

۲) چند عدد صحیح در $y=\sqrt{\frac{-x}{f(x)}}$ ؟



$\frac{-x}{f(x)} \geq 0 \rightarrow \begin{cases} x=- \\ f(x)=- \end{cases}$ یا $\{-2,-1,1\}$

$f(x)\neq 0$

$Dy=(-2,0)\cup(0,2) \rightarrow (-2,2)-\{0\} \rightarrow$ ۳ تا

$f(x)=x^2-2x+4-k \quad f(-2)=?$

$f(-2)=10$

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

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

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

$f(2)=-2$

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

۴)

$f(x)=\begin{cases} x-\sqrt{x+6} & : x>2 \\ x^2+2 & : x\leq 2 \end{cases}$

$f(f(a))+f(f(1))=9 \rightarrow 7+2=9$

$a-\sqrt{a+6}=2$

$f(2)=7$

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

$a-b=?$

$f(x-1)=a(x-1)^2+b(x-1)+2$

$ax^2+a-2ax-bx-b+2-ax^2+bx$

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

$-2ax=6x \rightarrow a=-3$

$a-b=2$

(۶ $f(x)=\dfrac{x^2+4x+5}{x^2+4x+7} \rightarrow f(\sqrt{3}-2)$

$\dfrac{(x+2)^2+1}{(x+2)^2+3} \rightarrow \dfrac{3+1}{3+3}=\dfrac{4}{6}=\dfrac{2}{3}$

(۷ $f\left(x-\dfrac{1}{x}\right)=\dfrac{x^4+1}{x^2} \rightarrow f(-3)=?$

$f\left(x-\dfrac{1}{x}\right)=\left(x-\dfrac{1}{x}\right)^2+2 = x^2+\dfrac{1}{x^2}$

$f(-3)=(-3)^2+2=11$

(۸ $f(x)=\{(2,0)(1,-4)(0,2)(7,1)\}$

$g(x)=\sqrt{9-x^2}$

$9-x^2\geq 0$

$x^2\leq 9 \rightarrow -3\leq x\leq 3 \rightarrow g(x)=\{(-3,\square),(-2,\square),(-1,\square)(0,3)(1,\sqrt{8})(2,\sqrt{5})(3,0)\}$

$\dfrac{f}{g}=?\ \left\{\left(2,\dfrac{0}{\sqrt{5}}\right)\left(1,\dfrac{-4}{\sqrt{8}}\right)\left(0,\dfrac{2}{3}\right)\right\}$

$\dfrac{g}{f}=?\ \left\{\left(2,\dfrac{\sqrt{5}}{0}\right)\left(1,\dfrac{\sqrt{8}}{-4}\right)\left(0,\dfrac{3}{2}\right)\right\}$

(۹ $f(x)=\{(2,1),(3,4),(-5,2)(1,-2)\}$

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

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

$3f^2(x)+1\ \{$

$f(2x)\ \{(4,1)(6,4)(-10,2)(2,-2)\}$

$f^2(x)=\{(2,1)(3,16)(-5,4)(1,4)\}$

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

(۱۰ (۱۲

$f(x)=\{(2,3)(7,2)(1,4)(3,1)\}$

$g(x)=\{(1,0)(2,1)(-1,4)(-2,-3)(3,-1)\}$

$f-g\ \{(1,4)(2,2)(3,2)\}$

$\dfrac{2f}{g}$ $2f=\{(2,6)(7,4)(1,8)(3,2)\} \rightarrow \dfrac{2f}{g}=\left\{(2,6)\left(1,\dfrac{8}{0}\right)(3,-2)\right\}$