

Date _____

Subject _____

کتاب ریاضی دوازدهم دفتر B تکلیف ۶

①

الف) $f(x) = 2 \sin^2\left(x + \frac{\pi}{4}\right) - 1$

$$0 \leq \sin^2\left(x + \frac{\pi}{4}\right) \leq 1 \rightarrow 0 \leq 2 \sin^2\left(x + \frac{\pi}{4}\right) \leq 2$$

$$-1 \leq 2 \sin^2\left(x + \frac{\pi}{4}\right) - 1 \leq 1 \rightarrow R = [-1, 1]$$

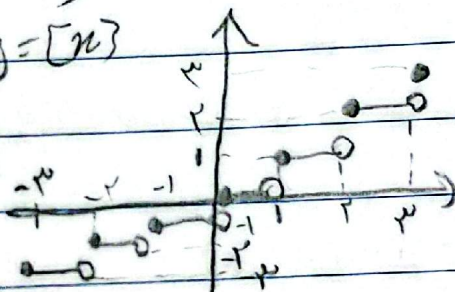
ب) $g(x) = 3 \cos^3 x - 4 \rightarrow -1 \leq \cos^3 x \leq 1 \rightarrow -3 \leq 3 \cos^3 x \leq 3$

$$-7 \leq 3 \cos^3 x - 4 \leq -1 \rightarrow R = [-7, -1]$$

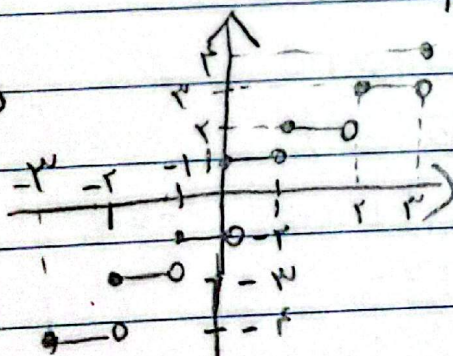
②

$$y = \frac{x}{|x|} + [x] \quad [-3, 3]$$

$$\begin{cases} x > 0 \rightarrow 1 + [x] \\ x < 0 \rightarrow -1 + [x] \end{cases} \quad y = [x]$$

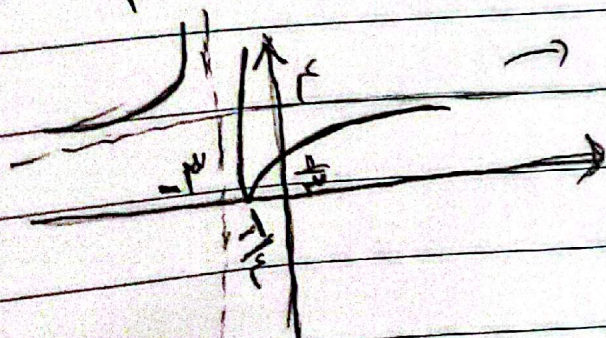
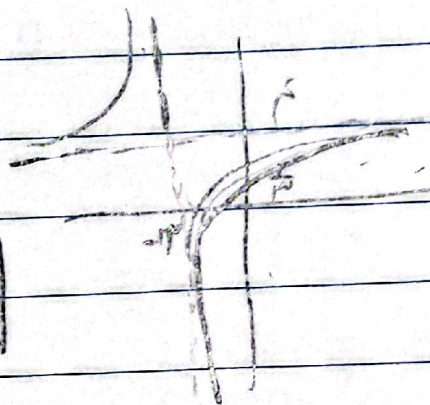


$$y = [x] + \frac{x}{|x|} \rightarrow$$



$$y = \left| \frac{x+1}{x+3} \right|$$

$$\frac{x+1}{x+3}$$

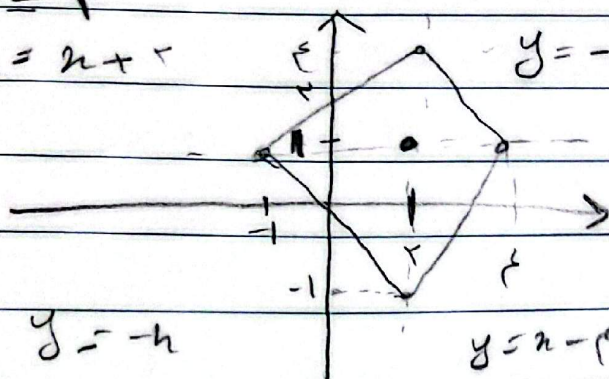


③

$$|x-2| + |y-1| = 4$$

$$y = x + 3$$

$$y = -x + 5$$



Ⓚ

ⓐ

$$\text{a)} \quad f(x) = x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}} \rightarrow t = \sqrt{x + \frac{1}{x}}$$

$$t^2 + \frac{1}{t^2} \quad t \geq \sqrt{2}$$

$$\hookrightarrow \frac{-b}{2a} = \frac{-2}{2} = -1 \rightarrow \text{نمی تواند منفی باشد}$$

$$R = [2 + 2\sqrt{2}, +\infty)$$

$$\rightarrow y = (2 - \sin x)(1 + \sin x)$$

$$y = -\sin^2 x + 2\sin x + 2$$

$$\sin x = 1 \rightarrow y = 1$$

$$\sin x = -1 \rightarrow \frac{-b}{2a} = \frac{-2}{-2} = 1 \rightarrow 1$$

$$R = [0, 1]$$

$$f(x) = \frac{-1}{x} + 10$$

$$D_f = \{x \mid x \in \mathbb{N}, x < 10\}$$

ⓐ

$$x=1 \rightarrow \frac{-1}{x} + 10 \leq \frac{21}{x}$$

$$x=2 \rightarrow \frac{-1}{x} + 10 \leq \frac{21}{x}$$

$$x=3 \rightarrow \frac{-1}{x} + 10 \leq \frac{21}{x}$$

$$n=9, V=\frac{21}{n}$$

$$\frac{21 + 21 \cdot 9}{9} = \frac{21 \cdot 10}{9} = \frac{210}{9} = \frac{70}{3}$$

$$f(x) = \sqrt{ax^r + bx + c} \quad [r, +\infty) \Rightarrow a=0 \quad b>0 \quad (V)$$

$$\sqrt{bx+c} \quad bx+c=0 \quad -b=c, \quad f(x)=1 \Rightarrow bx+c=1$$

$$g(x) = \sqrt{bx^r + 1x - c} = \sqrt{ax^r + f} \quad [r, +\infty)$$

$$\Rightarrow Rg = [r, +\infty)$$

$$f(x) = \frac{x^r - rx}{x+r} = \frac{x(x-r)(x+r)}{x+r} \quad R = \{1, b\}$$

$$\text{if } x = r, y = 1 \Rightarrow a = r, b = -r \quad (x-r)(x+r) = 0 \quad \begin{cases} x=r \\ x=-r \end{cases}$$

$$x^r - rx \rightarrow \frac{-b}{ra} = \frac{r}{r} = 1 \quad 1-r = -1 \Rightarrow R = [-1, +\infty) - \{1\}$$

$$c = -1 \rightarrow f\left(\frac{r-r}{-r}\right) = f(-1) = 1$$

(9)

$$y = \sqrt[3]{x^r + ax^r + bx - 1} \quad D = [a, b]$$

$$\text{given } \rightarrow (x-r)^r = x^r - 3x^r + 12x - 1$$

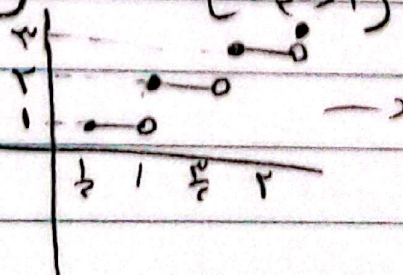
$$\Rightarrow a = -3, b = 12 \rightarrow y = \sqrt[3]{(x-r)^r} \rightarrow D = [-3, 12]$$

$$\underline{x = -3, y = -1} \quad \underline{x = 12, y = 10} \quad R = [-1, 10]$$

(10)

$$y = [x] + \left[x + \frac{1}{x}\right] \quad \left[\frac{1}{x}, 2\right]$$

$$\begin{cases} \frac{1}{x} \leq x < 1 \rightarrow 1 \\ 1 \leq x < \frac{x}{2} \rightarrow 2 \\ \frac{x}{2} \leq x < 2 \rightarrow 2 \end{cases}$$



dis. c.p.