

داریم در

(۲) ①

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

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

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

$$g(x) = 2 \cos^2 x - 2$$

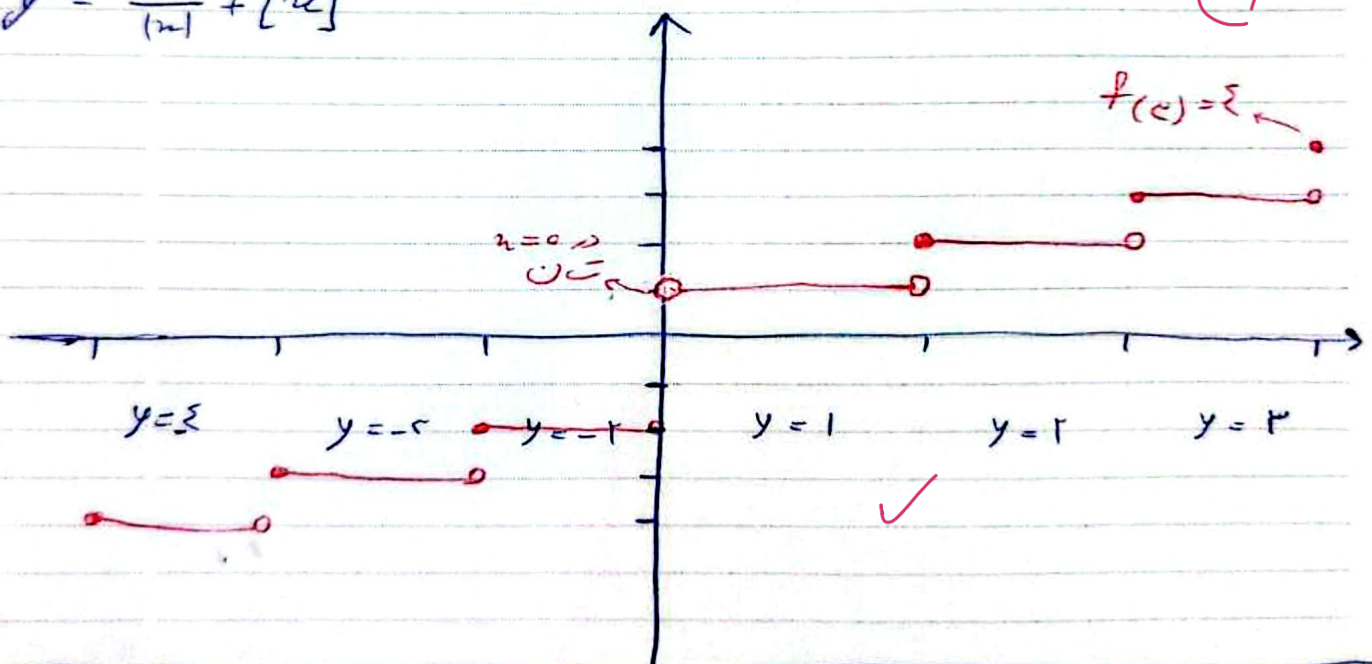
$$-1 \leq \cos x \leq 1 \rightarrow -1 \leq \cos^2 x \leq 1$$

$$\rightarrow -2 \leq 2 \cos^2 x \leq 2 \rightarrow -4 \leq 2 \cos^2 x - 2 \leq 0$$

$$R_g = [-4, 0]$$

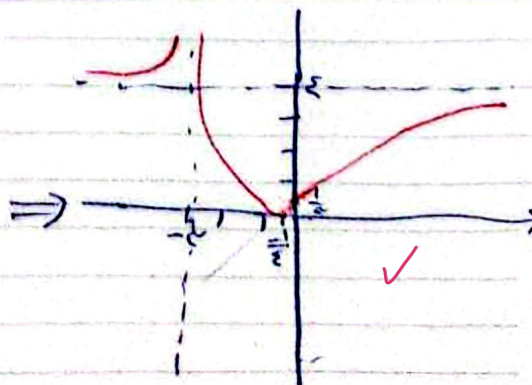
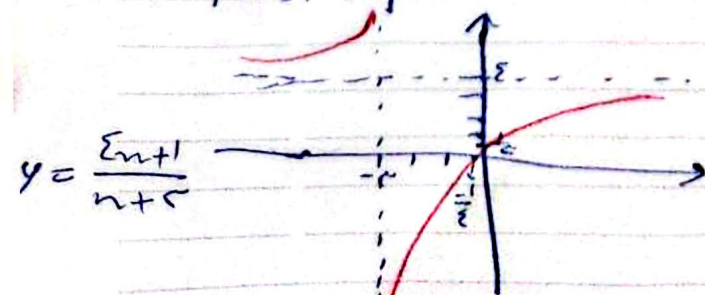
$$y = \frac{x}{[x]} + [x]$$

(۲) ②



$$y = \left| \frac{x+1}{x+2} \right|$$

(۲) ③



روز جمهوری اسلامی ایران (تعطیل) - شب قدر

M		4	11	18	25
T		5	12	19	26
W		6	13	20	27
T		7	14	21	28
F	1	8	15	22	29
S	2	9	16	23	30
S	3	10	17	24	31

(2)

(3)

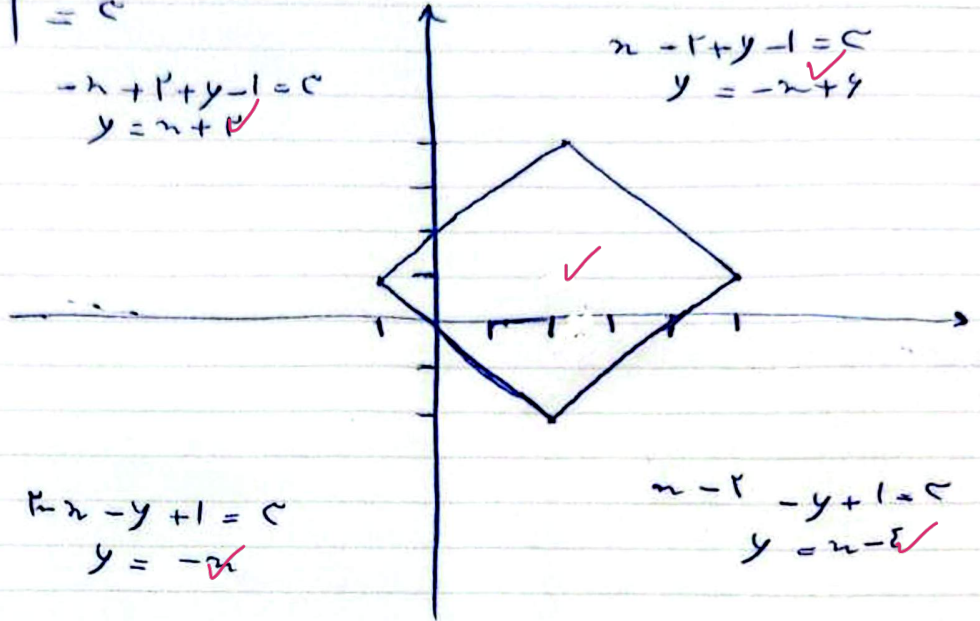
$$|x-1| + |y-1| = c$$

$$-x+1+y-1=c$$

$$y=x+c$$

$$x-1+y-1=c$$

$$y=-x+c+2$$



$$x-1-y+1=c$$

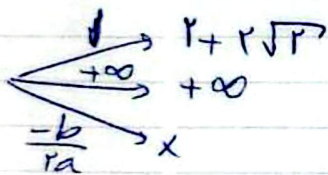
$$y=-x$$

$$x-1-y+1=c$$

$$y=x-c$$

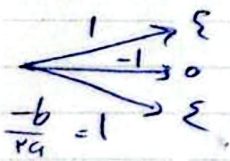
ا) $f(x) = x + \frac{1}{x} + r \sqrt{x + \frac{1}{x}} = \left(x + \frac{1}{x}\right)^r + r \sqrt{x + \frac{1}{x}}$ (2)

$x > 0 \rightarrow x + \frac{1}{x} \geq r$



$$R_f = [r + r\sqrt{r}, +\infty)$$

$$y = (c - \sin x)(1 + \sin x) = -\sin^2 x + r \sin x + c$$



$$R_y = [0, \epsilon]$$

$$f(x) = \frac{1}{c}x + 1.$$

(2)

(4)

$$= \frac{1}{c} \times 1 + 1 + \frac{1}{c} \times 2 + 1 + \frac{1}{c} \times c + 1 + \dots + \frac{1}{c} \times 9 + 1$$

$$= 9 + \frac{1}{c} \left(\underbrace{1 + 2 + c + \dots + 9}_{\frac{9 \times 10}{2}} \right) = 9 + \frac{50}{c} = \text{V.a.}$$

M	1	8	15	22	29
T	2	9	16	23	30
W	3	10	17	24	
T	4	11	18	25	
F	5	12	19	26	

$$f(x) = \sqrt{ax^2 + bx + c}$$

$$D_f = [r, +\infty) \rightarrow \text{v} \underline{c}, \underline{d} \rightarrow \underline{a} = 0$$

✓
(2)

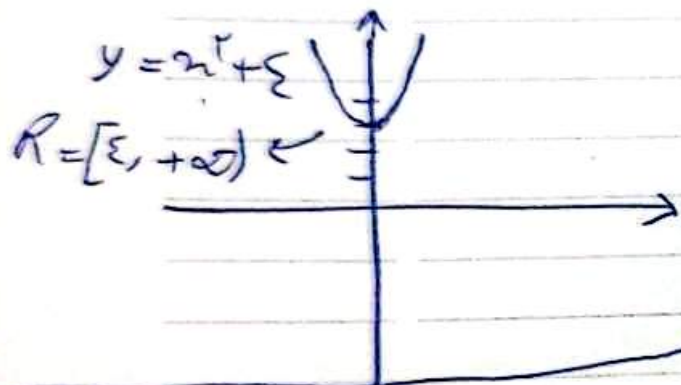
$$f(r) = rb + c = 0$$

$$g(x) = \sqrt{bx^2 + ax - rc}$$

$$f(c) = cb + c = 1$$

$$g(x) = \sqrt{x^2 + \varepsilon}$$

$$b = \checkmark, c = \checkmark -r$$



$$R_g = \sqrt{[\varepsilon, +\infty)} = [r, +\infty)$$

(2) ✓

$$f(x) = \frac{x^2 - \varepsilon x}{x + r} = \frac{x(x - r)(x + r)}{x + r} = x^2 - rx \quad x \neq -r$$

$$\min \left| \frac{1}{-1} \right|$$

$$f(-r) = 1 \quad x^2 - rx = 1 \rightarrow x = -r \leftarrow a$$

$$x = \varepsilon \leftarrow b$$

$$R_f = [-1, +\infty) \leftarrow \checkmark$$

$$f\left(\frac{a+b}{rc}\right) = f\left(\frac{-r+\varepsilon}{-r}\right) = f(-1) = \checkmark$$

(9)

$$y = \sqrt[n^2 + an^2 + bn - 1]$$

$$y = \sqrt{(n-1)^2} = \sqrt{n^2 - 2n^2 + 12n - 1}$$

(2)

$$a = -2 \checkmark$$

$$b = 12$$

$$-1 \leq n \leq 12 \rightarrow -1 \leq n - 1 \leq 1.$$

$$R_y = [-1, 1] \checkmark$$

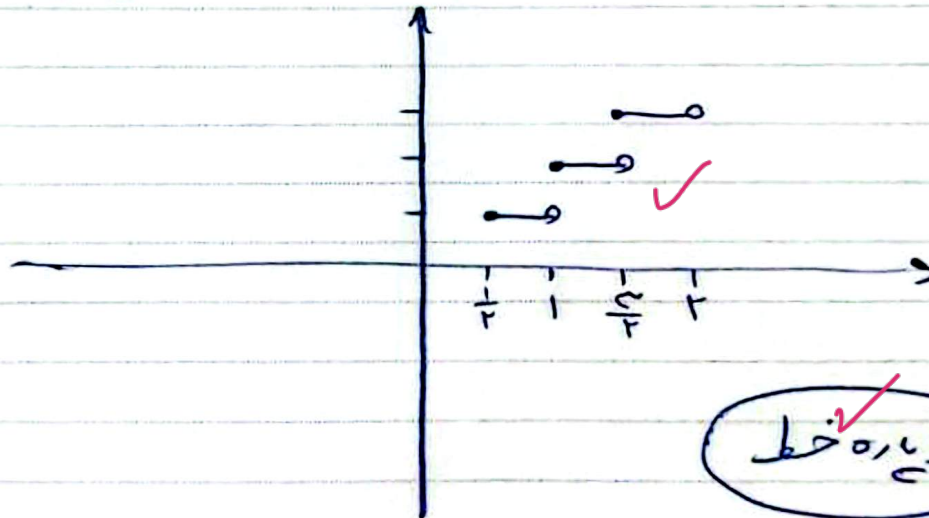
$$y = [n] + [n + \frac{1}{p}]$$

(2) (10)

$$\frac{1}{p} \leq n < 1 \rightarrow y = 1$$

$$1 \leq n < \frac{p}{2} \rightarrow y = 2$$

$$\frac{p}{2} \leq n < p \rightarrow y = 3$$



$$[0, p] \checkmark$$