

دوازدهم خرداد

مستقیم

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

①

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

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

$$ب) g(x) = 2 \cos^2 x - 5$$

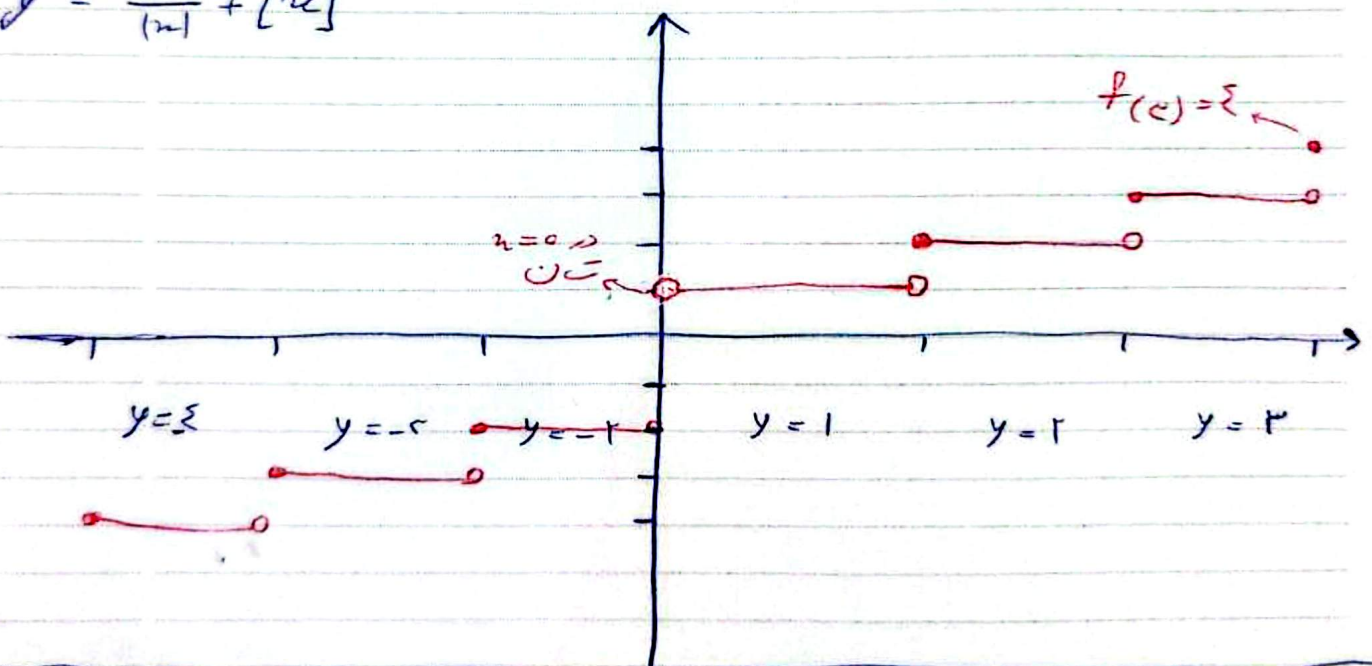
$$-1 \leq \cos x \leq 1 \rightarrow -1 \leq \cos^2 x \leq 1$$

$$\rightarrow -1 \leq 2 \cos^2 x \leq 2 \rightarrow -7 \leq 2 \cos^2 x - 5 \leq -1$$

$$R_g = [-7, -1]$$

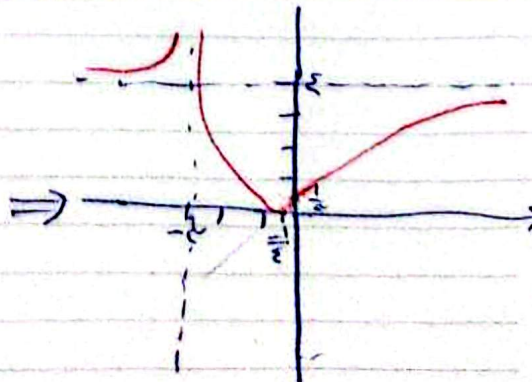
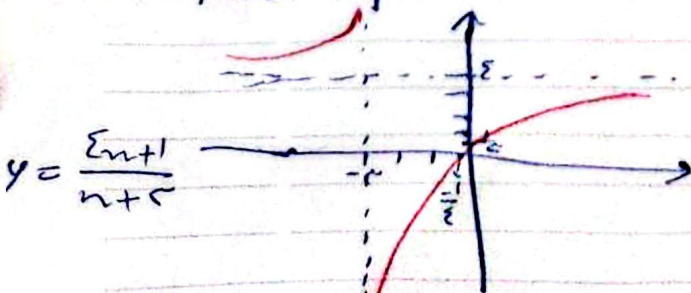
$$y = \frac{x}{|x|} + [x]$$

②



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

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

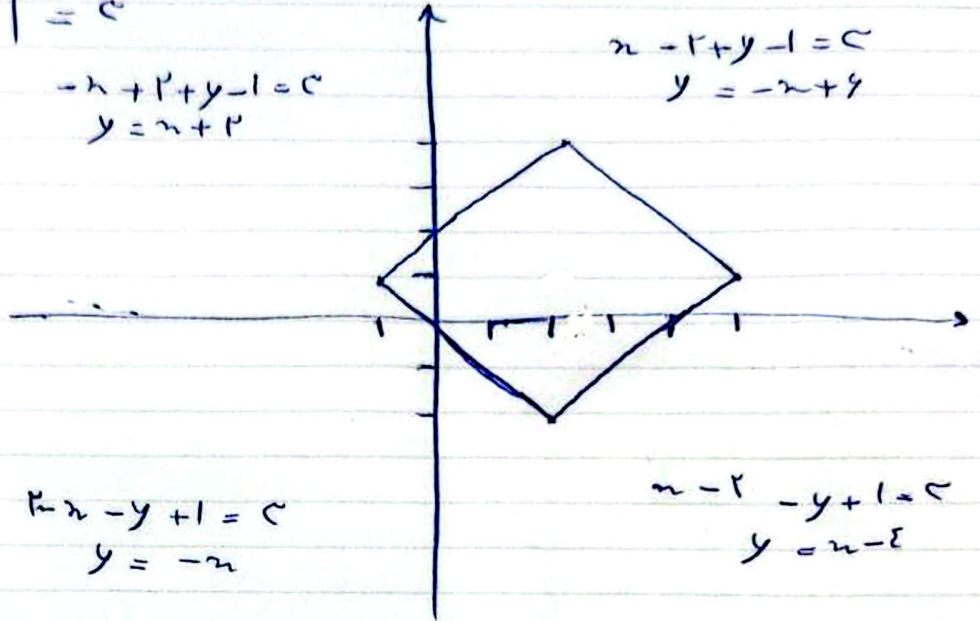
$$|x-1| + |y-1| = c$$

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

$$y=x+c$$

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

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



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

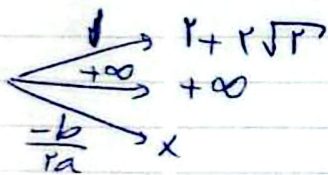
$$y=-x$$

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

$$y=x-c$$

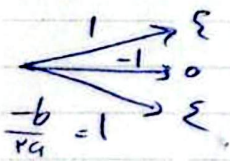
ان) $f(x) = x + \frac{1}{x} + r \sqrt{x + \frac{1}{x}} = \left(\sqrt{x + \frac{1}{x}}\right)^2 + r \sqrt{x + \frac{1}{x}}$ 9

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



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

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



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

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

$$\begin{aligned} &= \frac{1}{c} \times 1 + 1 + \frac{1}{c} \times r + 1 + \frac{1}{c} \times c + 1 + \dots + \frac{1}{c} \times q + 1 \\ &= q + \frac{1}{c} (1 + r + c + \dots + q) = q + \frac{q \times 1}{c} = \text{Va} \end{aligned}$$

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	

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

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

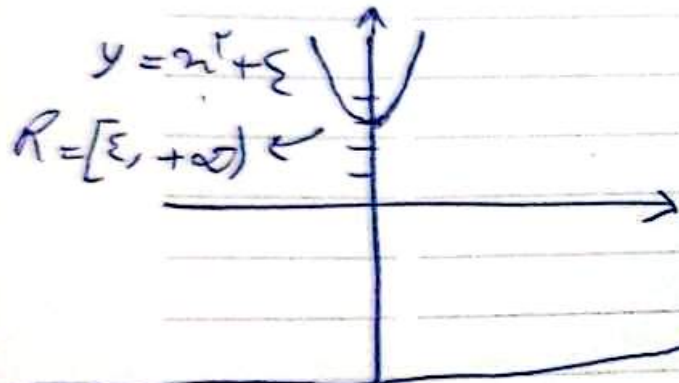
$$f(r) = rb + c = 0$$

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

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

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

$$b=1, c=-r$$



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

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

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

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

$$x = \varepsilon \leftarrow b$$

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

$$f\left(\frac{a+b}{rc}\right) = f\left(\frac{-r+\varepsilon}{-r}\right) = f(-1) = \text{v.c.}$$

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

$$y = \sqrt[n^2 + (n-1)^2] = \sqrt[n^2 - 4n^2 + 12n - 1]$$

$$a = -4$$

$$b = 12$$

$$-\frac{1}{2} \leq n \leq \frac{1}{2} \rightarrow -1 \leq n - 1 \leq 1$$

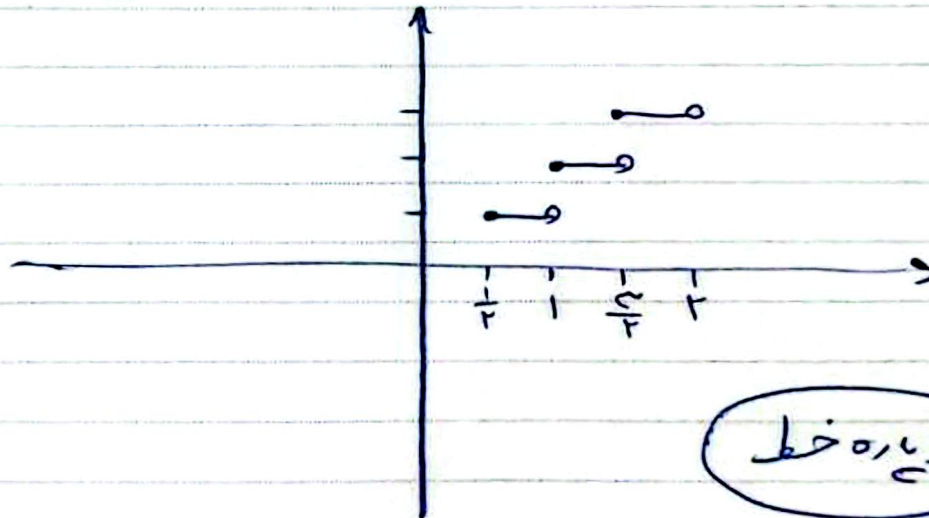
$$R_y = [-1, 1]$$

$$y = [n] + \left[n + \frac{1}{r}\right]$$

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

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

$$\frac{r}{r} \leq n < r \rightarrow y = r$$



خط 0, 1, r