

Date: \_\_\_\_\_

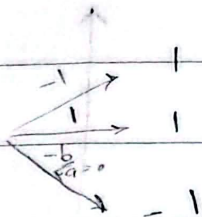
Subject: \_\_\_\_\_

بسم الذي خلق السموات

تأليف ٤

سأشير عراقي زاده

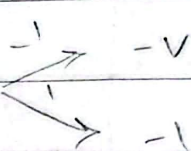
الف)  $f(x) = 2 \sin^2\left(x + \frac{\pi}{4}\right) - 1$



$$Rf = [-1, 1]$$

1

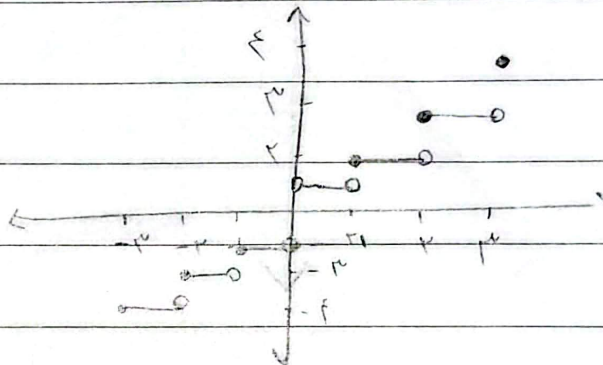
ب)  $g(x) = 3 \cos^3 x - 4$



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

5

$$f(x) = \frac{x}{|x|} + [x]$$



2

$$-3 \leq x < -2 \rightarrow -1 + (-3) = -4$$

$$-2 \leq x < -1 \rightarrow -1 + (-2) = -3$$

$$-1 \leq x < 0 \rightarrow -1 + (-1) = -2$$

$$0 \leq x < 1 \rightarrow 1 + 0 = 1$$

$$1 \leq x < 2 \rightarrow 1 + 1 = 2$$

$$2 \leq x < 3 \rightarrow 1 + 2 = 3$$

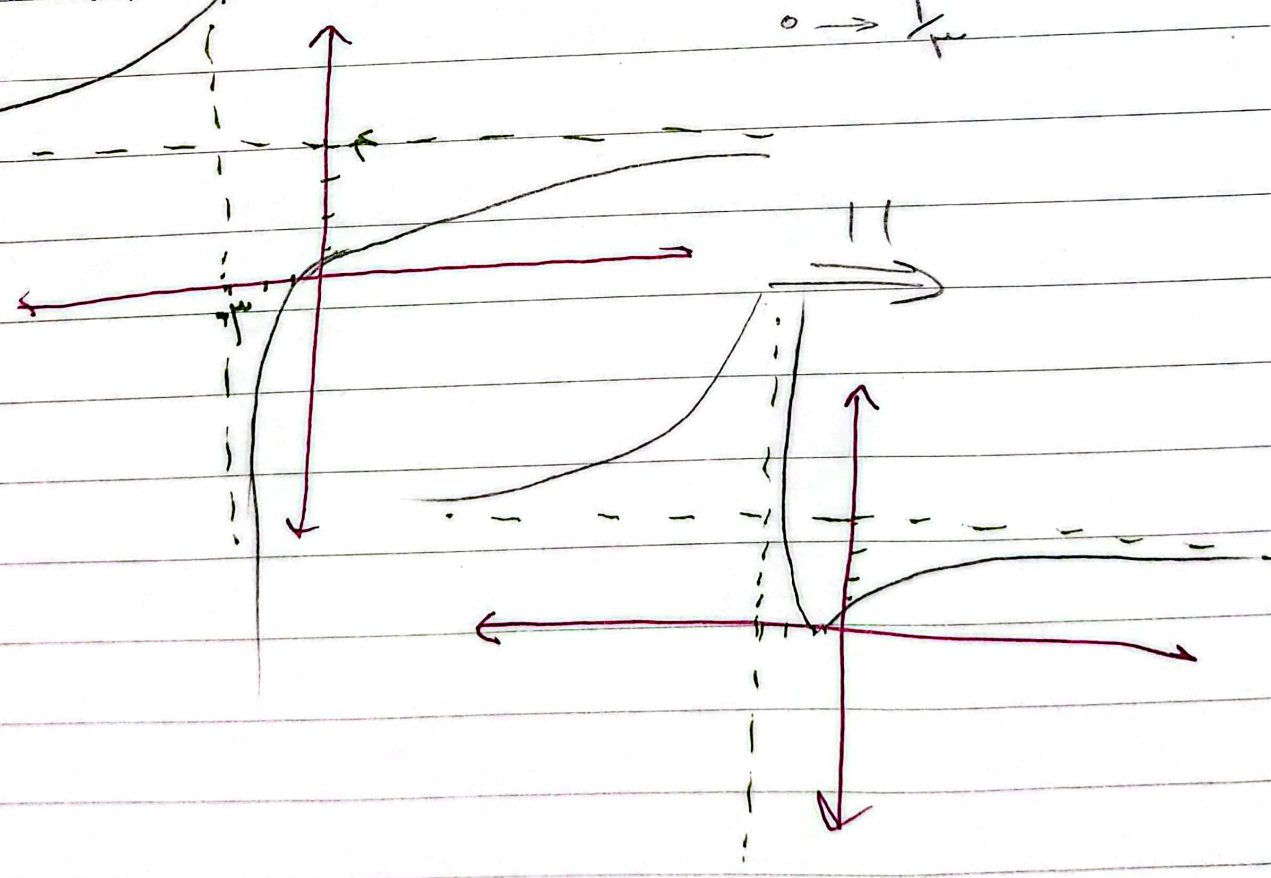
$$x = 3 \rightarrow 1 + 3 = 4$$

15

(2)

$$\left| \frac{f_{n+1}}{n+1} \right| \rightarrow \frac{f_{n+1}}{n+1}$$

$$0 \rightarrow \frac{1}{n}$$



$$|y-1| + |x-2| - 3 = 0$$

$$y > 1 \quad x < 2$$

$$y-1+2-x-3=0$$

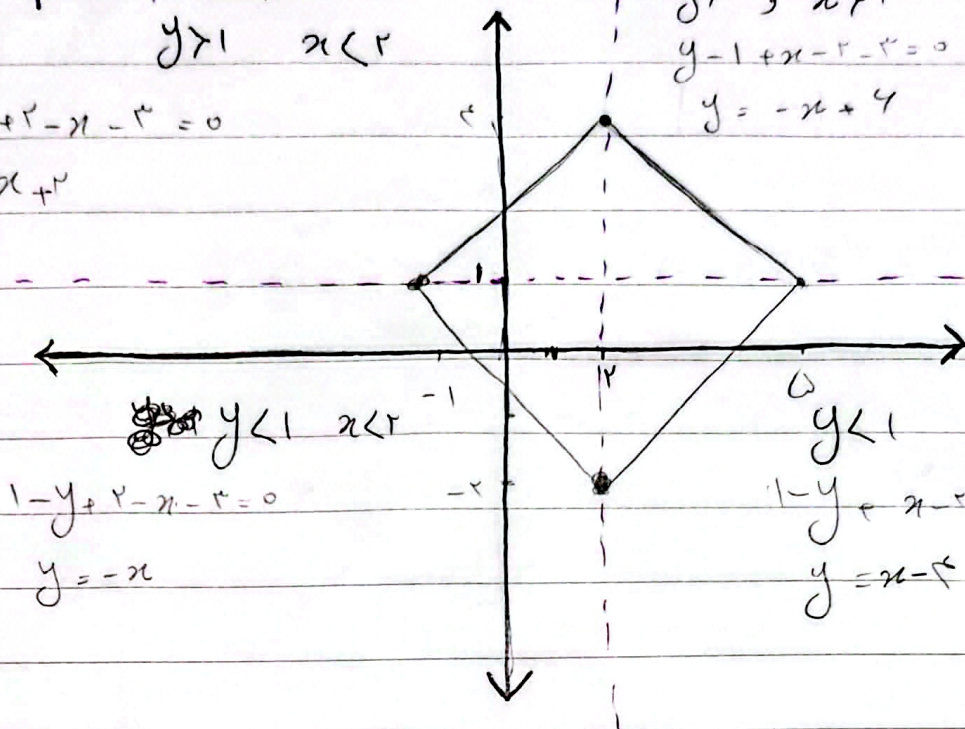
$$y = x+2$$

$$y > 1, \quad x > 2$$

$$y-1+x-2-3=0$$

$$y = -x+6$$

R.



$$y < 1, \quad x < 2$$

$$1-y+2-x-3=0$$

$$y = -x$$

$$y < 1, \quad x > 2$$

$$1-y+x-2-3=0$$

$$y = x-4$$

10

$$\text{الف) } L(x) = \left(x + \frac{1}{x}\right) + 2\sqrt{x + \frac{1}{x}} + 1 - 1$$

$$15 \quad \sqrt{x + \frac{1}{x}} = a \Rightarrow (a+1)^2 - 1 \Rightarrow (\sqrt{2}+1)^2 - 1 \Rightarrow$$

$$x > 0 \Rightarrow R_p = [2, +\infty)$$

$$2 + 2\sqrt{2} - 1 \Rightarrow$$

$$f(x) \geq 2 + 2\sqrt{2}$$

$$a \geq \sqrt{2}$$

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

$$16 \quad y = (1 - \sin x)(1 + \sin x) = 1 - \sin^2 x = \cos^2 x \Rightarrow$$

$$20 \quad -\sin^2 x + 2\sin x + 1 = 0$$

$$R_p = [0, 1]$$

$$L(x) = -\frac{1}{x} x + 1 \quad D_f = \{1, 2, \dots, 9\} \quad 4 \times \Delta = 40$$

$$9 \times 10 \rightarrow 90 + \left(-\frac{1}{1} - \frac{1}{2} - \dots - \frac{1}{9}\right) = 90 - \left(\frac{1+2+\dots+9}{1}\right) = 90 - 45 = 45$$

$$L(x) = \sqrt{ax^2 + bx + c} \xrightarrow{\text{Geo}} a = 0$$

$$b > 0 \quad \Rightarrow \quad \underline{2}$$

$$\sqrt{3b+c} = 1 \Rightarrow 3b+c=1 \quad \begin{cases} b=1 \\ c=-2 \end{cases}$$

$$3b+c=0$$

$$g(x) = \sqrt{x^2 + \dots} \rightarrow R = [f, +\infty) \quad Rg = [1, +\infty)$$

$$f(x) = \frac{x(x-1)(x+1)}{(x+1)} \rightarrow f(x) = x(x-1) \quad a = -1$$

$$R_{f'} = [-1, +\infty) \quad f'(-1) = -1x - 1 = 1 \quad b = 1$$

$$x(x-1) = 1 \Rightarrow x = 2$$

$$f\left(\frac{1}{-1}\right) = f(-1) = -1x - 1 = 1$$

$$(x-1)^4 = x^4 - 4x^3 + 12x^2 - 12x + 1$$

$$D_f = [-1, 1] \quad \Rightarrow \quad R_f = [-1, 1]$$

$$L(x) = x - 1$$

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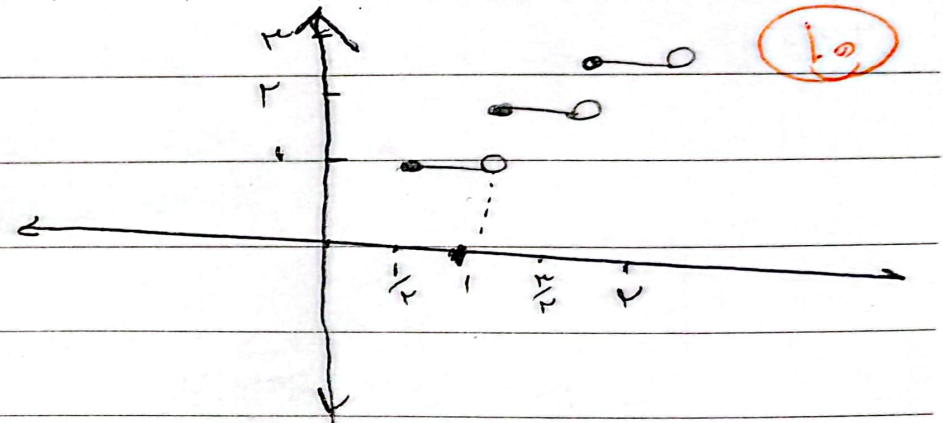
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$$y = [x] + \left[x + \frac{1}{r}\right]$$

$$\frac{1}{r} \leq x < 1 \rightsquigarrow 0 + 1 = 1$$

$$1 \leq x < \frac{2}{r} \rightsquigarrow 1 + 1 = 2$$

$$5 \quad \frac{2}{r} \leq x < 2 \rightsquigarrow 1 + 2 = 3$$



$\{0, \frac{1}{r}, 2\}$