

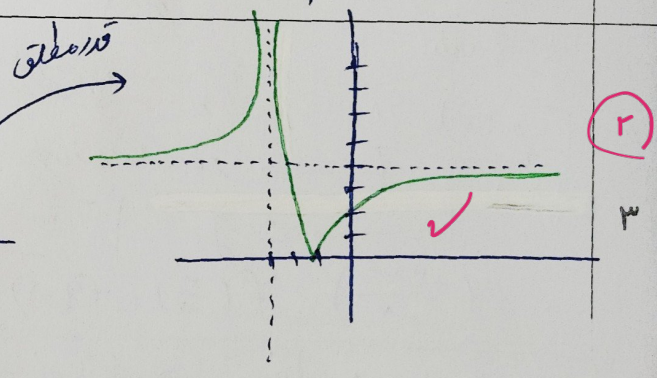
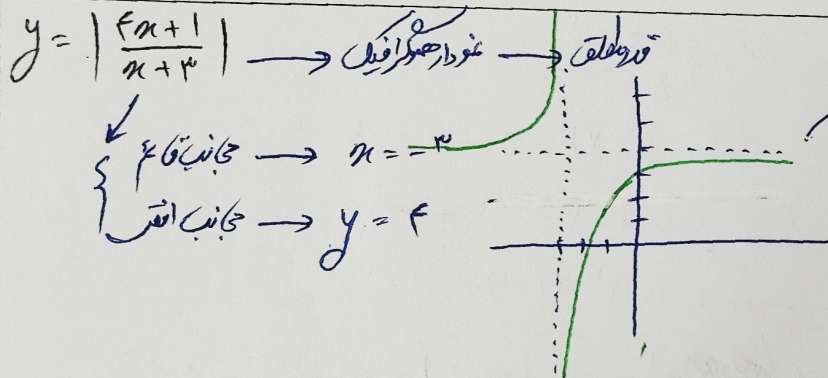
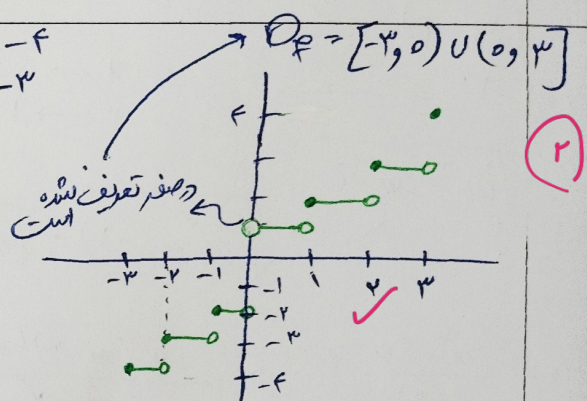
الف) $f(x) = 2 \sin^2(x + \frac{\pi}{3}) - 1 \rightarrow -1 \leq \sin^2 \alpha \leq 1 \rightarrow 0 \leq \sin^2 \alpha \leq 1$

$\rightarrow 0 \leq 2 \sin^2 \alpha - 1 \leq 1 \rightarrow [-1, 1]$

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

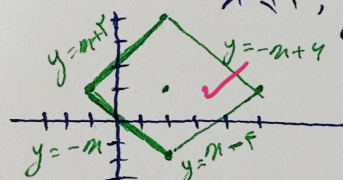
$\rightarrow R_f = [-7, -1]$

$y = \frac{x}{|x|} + [x]$
 بازه $[-3, 3]$
 جدول تغییرات:
 $-3 \leq x < -2 \rightarrow -1 + (-3) = -4$
 $-2 \leq x < -1 \rightarrow -1 + (-2) = -3$
 $-1 \leq x < 0 \rightarrow -1 + (-1) = -2$
 $0 \leq x < 1 \rightarrow +1 + (0) = 1$
 $1 \leq x < 2 \rightarrow +1 + (1) = 2$
 $2 \leq x < 3 \rightarrow +1 + (2) = 3$
 $x = 3 \rightarrow 1 + 3 = 4$



$|x-2| + |y-1| = 3 \rightarrow$ ضلع مربع

نقاط گوشه:
 $(2+3, 1) = (5, 1)$
 $(2-3, 1) = (-1, 1)$
 $(2, 1+3) = (2, 4)$
 $(2, 1-3) = (2, -2)$



مجموعه جواب:
 $x \geq 2, y \geq 1 \rightarrow x-2+y-1=3 \rightarrow y = -x+6$
 $x \geq 2, y \leq 1 \rightarrow x-2-y+1=3 \rightarrow y = x-4$
 $x \leq 2, y \geq 1 \rightarrow -x+2+y-1=3 \rightarrow y = x+2$
 $x \leq 2, y \leq 1 \rightarrow -x+2-y+1=3 \rightarrow y = -x$

الف) $f(x) = x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}} \xrightarrow{\text{تغییر متغیر}} \sqrt{x + \frac{1}{x}} = t \rightarrow t^2 + 2t \rightarrow at^2 + bt + c$

$\Rightarrow t = \sqrt{x + \frac{1}{x}} \rightarrow \begin{cases} -\frac{b}{2a} = -1 \\ \min = 2 \\ \max = \infty \end{cases} \rightarrow R_f = [2+2\sqrt{2}, +\infty)$

ب) $y = (3 - \sin x)(1 + \sin x) \rightarrow 3 + 3\sin x - \sin x - \sin^2 x = -\sin^2 x + 2\sin x + 3$

$\square = \sin x \rightarrow \begin{cases} -\frac{b}{2a} = 1 \\ \max = 1 \\ \min = -1 \end{cases} \rightarrow \begin{aligned} -1 + 2 + 3 &= 4 \\ -1 - 2 + 3 &= 0 \end{aligned} \rightarrow R_f = [0, 4]$

②

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$$-\frac{F\omega}{\mu} + q_0 = q_0 - l\omega = V\omega$$

Q

Y

$g(x) = \sqrt{bx^2 + ax - c}$
 $\Rightarrow P = P \quad \rightarrow \quad \sqrt{x^2 - (-2)} = \sqrt{x^2 + 2}$



$\Rightarrow R_f = [2, +\infty)$

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$$\begin{aligned} & \text{f}\left(\frac{a+b}{rc}\right) \rightarrow c = y_s = 1 - \frac{b}{ra} = 1 \rightarrow y_s = 1 - 1 = -1 \rightarrow c = -1 \\ & \hookrightarrow \text{f}\left(\frac{-1 + \frac{b}{ra}}{-1}\right) = \text{f}\left(\frac{1}{ra}\right) = \text{f}(1) \rightarrow (-1)^1 - 1(-1) = 1 + 1 = 2 \end{aligned}$$

①

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②

$y = [x] + \left[x + \frac{1}{y}\right]$
 $\emptyset = \left[\frac{1}{y}, y\right) \xrightarrow{\text{Skizze}} \begin{cases} \frac{1}{y} \leq x < 1 \rightarrow \cancel{\left[x\right]} + \cancel{\left[x + \frac{1}{y}\right]} = 1 \\ 1 \leq x < 1 + \frac{1}{y} \rightarrow \underset{1}{\left[x\right]} + \left[x + \frac{1}{y}\right] = 1 + 1 = 2 \\ 1 + \frac{1}{y} \leq x < 2 \rightarrow \underset{1}{\left[x\right]} + \cancel{\underset{y}{\left[x + \frac{1}{y}\right]}} = 1 + y = y \end{cases}$

$$\frac{d}{dt} \ln \rho = 0$$

اسم خود

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