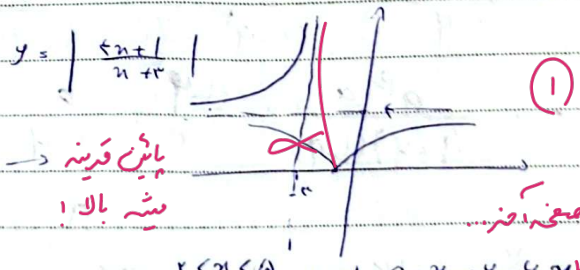
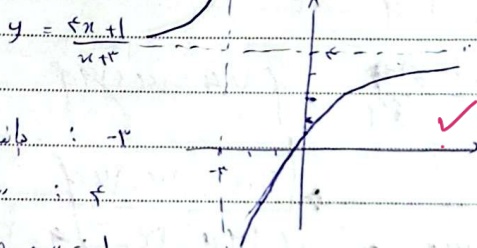
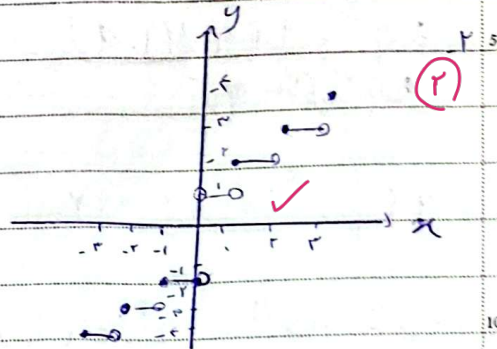


ا) $\sin\left(n + \frac{\pi}{2}\right) \begin{cases} \rightarrow 1 \rightarrow f(n) = 1 \\ \rightarrow -1 \rightarrow f(n) = -1 \end{cases} \quad R = [-1, 1] \checkmark$

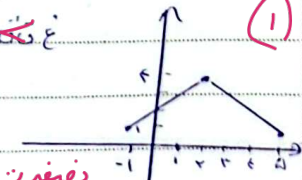
ب) $\cos x \begin{cases} \rightarrow 1 \rightarrow g(x) = 1 \\ \rightarrow -1 \rightarrow g(x) = -1 \end{cases} \quad R = [-1, 1] \checkmark$

$x < n < -2 \rightarrow [n] = -2 \rightarrow y = -1 - 2 = -3$
 $-2 < n < -1 \rightarrow [n] = -1 \rightarrow y = -1 - 1 = -2$
 $-1 < n < 0 \rightarrow [n] = 0 \rightarrow y = -1 - 0 = -1$
 $0 < n < 1 \rightarrow [n] = 1 \rightarrow y = 1 + 1 = 2$
 $1 < n < 2 \rightarrow [n] = 2 \rightarrow y = 1 + 2 = 3$
 $n = 2 \rightarrow [n] = 2 \rightarrow y = 1 + 2 = 3$



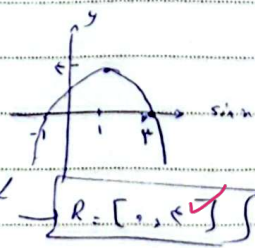
$|y-1| = 3 - |x-2|$
 $\begin{cases} x > 2 \rightarrow |y-1| = 3 - (x-2) = 5-x \\ x < 2 \rightarrow |y-1| = 3 + (x-2) = x+1 \end{cases}$

$|y-1| + |x-2| = 3$
 صفحه 88 جزوه 2



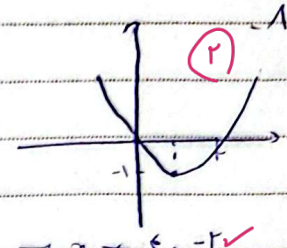
ان) $\frac{n+1}{n} > 2 \rightarrow R = [2 + 2\sqrt{2}, +\infty)$
 $\frac{n+1}{n} < 2 \rightarrow R = (-\infty, 2 + 2\sqrt{2})$

ب) $y = 3 + \frac{2\sin x - \sin^2 x - \sin^2 x}{2\sin x} \quad \text{exc} \left| \frac{-b}{2a} = 1 \right.$
 $y = 3 + 2 - 1 = 4$



$f(n) = -\frac{1}{3} (1 + 2 + \dots + 9) + 9(1) = -\frac{1}{3} \left(\frac{9 \times 10}{2} \right) + 9 = -15 + 9 = -6$

$a \neq 0 \rightarrow f(x) = \sqrt{bx+c}$ $bx+c = x-r \rightarrow b=1 \rightarrow f(x) = \sqrt{x-r}$ (r) ✓
 $c = -r$ $f(r) = 1$ ✓
 $g(x) = \sqrt{x^2 - r(-r)} = \sqrt{x^2 + r^2}$ $g(x) = r$ $R = [r, \infty)$

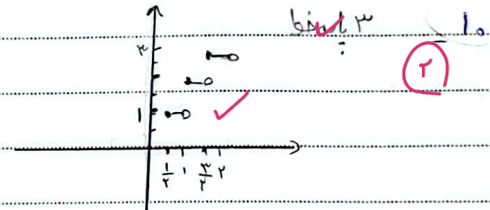
$f(x) = \frac{x(x^2-r)}{x+r} = \frac{x(x+r)(x-r)}{x+r} = x(x-r) = x^2 - rx$
 $x \neq -r$
 $x^2 - rx \neq 1 \rightarrow x^2 - rx - 1 \neq 0 \rightarrow (x-r)(x+r) \neq 0 \rightarrow x \neq r, -r$ ✓


$R = [-\frac{r}{2}, +\infty) - \{1\}$ $D = R - \{1\}$ $f(\frac{r}{-r}) = f(-1) = (-1)^2 - r(-1) = 1 + r$ (r) 9
 $= 1 + r$ ✓

$y = \sqrt[3]{(x-r)^3} = \sqrt[3]{x^3 - 1 + 3(x)(-r)(x-r)} = \sqrt[3]{x^3 - 1 - 6rx^2 + 6rx}$

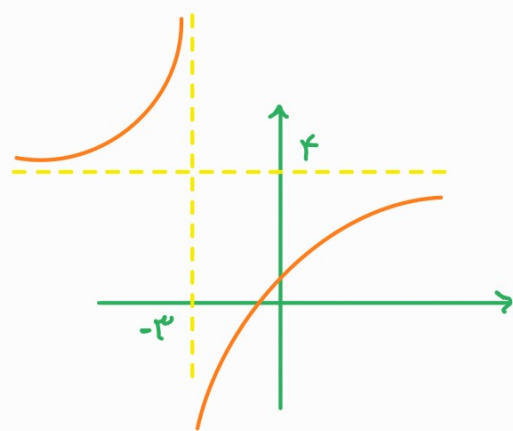
$a = -4$ $b = 12$ $D = [-4, 12]$ $y = x + r$ $\begin{matrix} x=4 & y=1 \\ x=12 & y=1 \end{matrix}$ $R = [-4, 12]$ (r) 9

$\frac{1}{r} \leq x \leq 1 \rightarrow [x] = 0$ $[x + \frac{1}{r}] = 1 \rightarrow y = 1$
 $1 \leq x \leq \frac{r}{r} \rightarrow [x] = 1$ $[x + \frac{1}{r}] = 1 \rightarrow y = r$
 $\frac{r}{r} \leq x \leq r \rightarrow [x] = 1$ $[x + \frac{1}{r}] = 2 \rightarrow y = r^2$



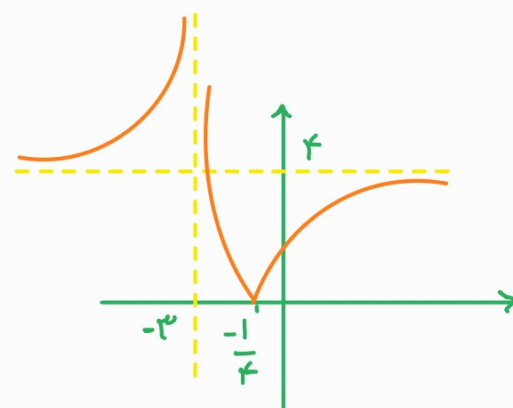
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$$y = \frac{4x+1}{x+3}$$

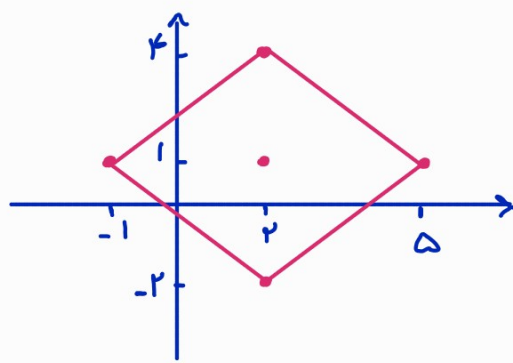


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$$y = \left| \frac{4x+1}{x+3} \right|$$



$$\begin{cases} x > 2, y > 1 \rightarrow y = -x + 4 \\ x > 2, y \leq 1 \rightarrow y = x - 4 \\ x \leq 2, y > 1 \rightarrow y = x + 2 \\ x \leq 2, y \leq 1 \rightarrow y = -x \end{cases}$$



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