

19, 175

تکلیف ہے

طرازہ

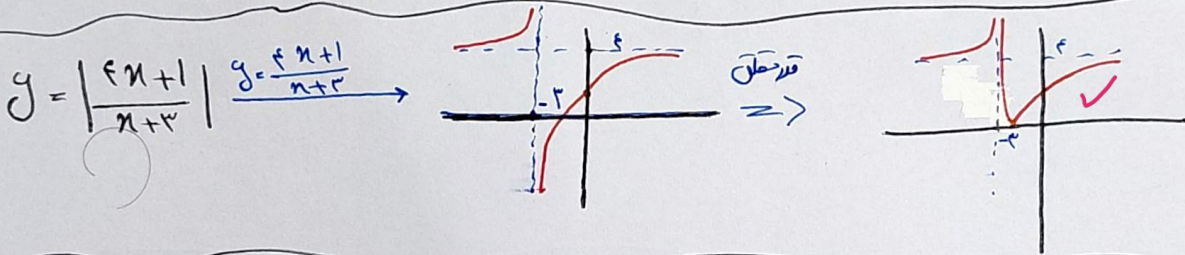
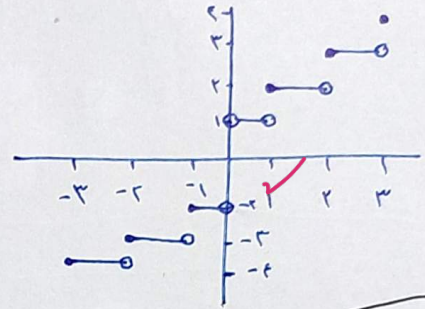
علیٰ ملاحظہ

الف) $f(n) = 2 \sin^2(n + \frac{\pi}{2}) - 1$ $\xrightarrow{aD^2 + bD + c}$ $\begin{matrix} \text{max} & 2-1=1 \\ & -1 \\ \text{min} & -1-1=-2 \\ & 0-1=-1 \end{matrix} \Rightarrow R_f = [-2, 1]$

ب) $g(n) = 3 \cos^2 n - 5 \rightarrow -1 \leq \cos n \leq 1 \Rightarrow -1 \leq \cos^2 n \leq 1 \Rightarrow -3 \leq 3 \cos^2 n \leq 3$
 $\Rightarrow -8 \leq 3 \cos^2 n - 5 \leq -2$

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

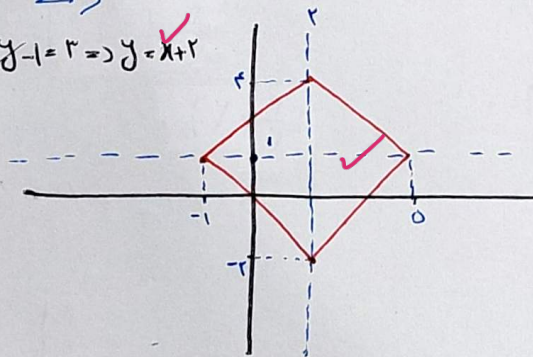
$[-3, -1]$	$\Rightarrow -1 + (-3) = -4$
$[-2, -1]$	$\Rightarrow -1 + (-2) = -3$
$[-1, 0]$	$\Rightarrow -1 + (-1) = -2$
$[0, 1]$	$\Rightarrow -1 + 0 = -1$
$[1, 2]$	$\Rightarrow -1 + 1 = 0$
$[2, 3]$	$\Rightarrow -1 + 2 = 1$
$[3, 4]$	$\Rightarrow -1 + 3 = 2$
$[4, 5]$	$\Rightarrow -1 + 4 = 3$
$[5, 6]$	$\Rightarrow -1 + 5 = 4$



$|x-2| + |y-1| = 3 \Rightarrow$

$x-2+y-1=3 \Rightarrow y = -x+6$

$2-x+y-1=3 \Rightarrow y = x+2$



$2-x+1-y=3 \Rightarrow y = -x$

$x-2-y+1=3 \Rightarrow y = x-4$

د) $f(n) = n + \frac{1}{n} + \sqrt{n+1}$ $\xrightarrow{\text{min}}$ $-2+2+3=3$ $R_f = [3, \infty)$
 $\xrightarrow{\text{max}}$ $-1-2+3=0$ $R_f = (-\infty, 0] \cup [3, \infty)$
 $\Rightarrow R_f = (-\infty, -1+\sqrt{2}] \cup [1+\sqrt{2}, \infty)$

$f(n) = -\frac{1}{n} + 1$ $\xrightarrow{0.5 \rightarrow \frac{1}{2}}$ $\begin{cases} * 9 \times 1 \\ * (-\frac{1}{2} + \frac{1}{2} + \dots + \frac{1}{2}) = -\frac{1}{2} \times \frac{9}{2} = -\frac{9}{4} \end{cases}$
 $\Rightarrow$ جمع برک : $9 \cdot -\frac{9}{4} = -\frac{81}{4}$

$$f(x) = \sqrt{ax^2 + bx + c} \xrightarrow{R = [x, +\infty)} a \neq 0 \Rightarrow 4b^2 - 4ac = 0 \Rightarrow b^2 = ac \Rightarrow b = \pm \sqrt{ac} \quad (r) \quad (1)$$

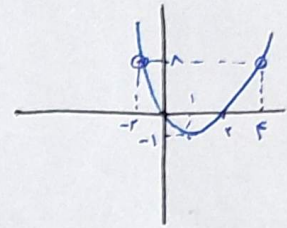
$$f(x) = 1 \rightarrow 4b^2 - 4ac = 0 \Rightarrow b = \pm \sqrt{ac}$$

$$\Rightarrow g(x) = \sqrt{bx^2 + ax - c} = \sqrt{x^2 + 1} \Rightarrow R_f = [1, +\infty)$$

$$f(x) = \frac{x(x+1)(x+2)}{x+1} = x^2 - x = x(x-1)$$

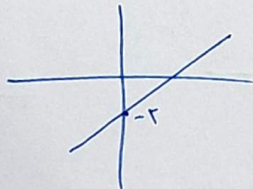
$$\Rightarrow D_f = R - \{0, -1\} \Rightarrow R_f = [-1, +\infty) - \{1\}$$

$$\Rightarrow f\left(\frac{-r \pm \sqrt{r^2 - 4ac}}{-2a}\right) = f(-1) = \frac{r}{2}$$



$$g = \sqrt[3]{x^3 + ax^2 + bx - 1} \xrightarrow{\text{deg } 3} \sqrt[3]{(x-1)^3} = \sqrt[3]{x^3 - 3x^2 + 3x - 1}$$

$$\Rightarrow D_g = [-1, 1] \Rightarrow f(-1) = -1, f(1) = 1 \Rightarrow R_g = [-1, 1]$$



$$g = \left[x \right] + \left[x + \frac{1}{x} \right] \begin{cases} \left[\frac{1}{x}, 1 \right) \\ \left[1, \frac{x}{2} \right) = 2 \\ \left[\frac{x}{2}, 2 \right) = 3 \end{cases}$$

