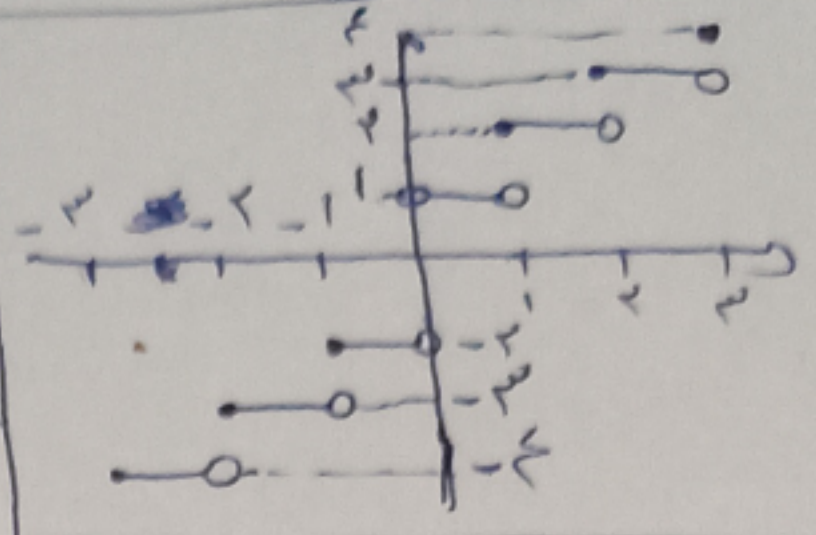
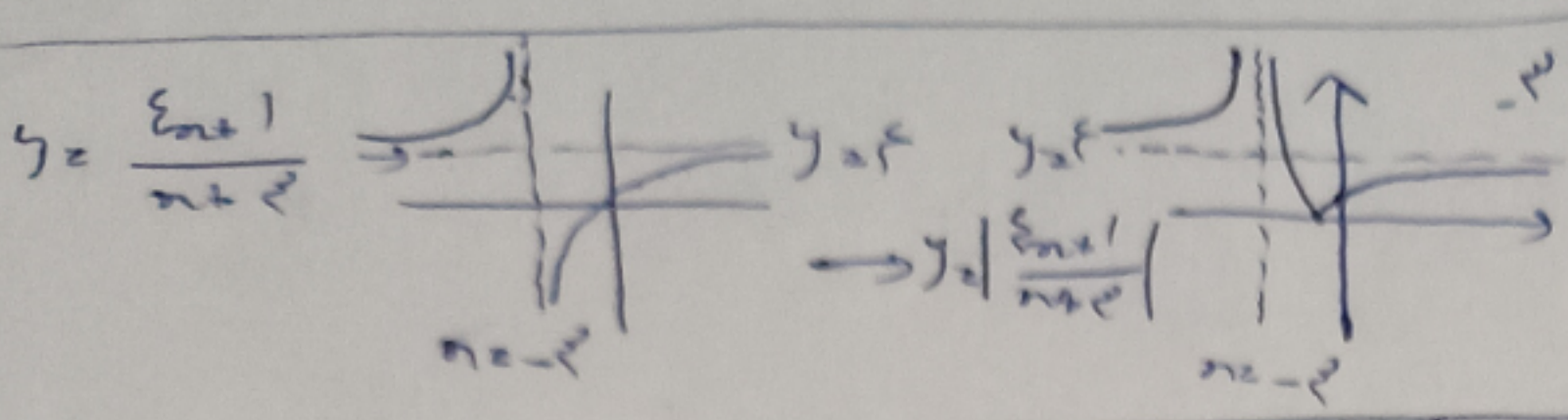


محمد سیران | ۱- الف (۱) $\sin^2 x \rightarrow 0 \rightarrow \sin^2 x \rightarrow 1$ (۲) $\sin^2 x \rightarrow 1 \rightarrow \sin^2 x \rightarrow 0$ (۳) $\sin^2 x \rightarrow 0 \rightarrow \sin^2 x \rightarrow 1$



(۱) $\sqrt{n+1} + 1 = f(n)$

$n + \frac{1}{n} > 1 \rightarrow \sqrt{n+1} > 1$

$(\sqrt{n+1} + 1) > 1 + 1 + \sqrt{2}$

$1 + 1 + \sqrt{2} - 1 = 1 + \sqrt{2} \rightarrow R_f = [1 + \sqrt{2}, +\infty)$

$y = -\sin^2 x \sin x + \sin^2 x \sin x$
 $\sin x = 1 \rightarrow -1 + 1 = 0$
 $\sin x = -1 \rightarrow -1 - 1 = -2$

$R_f = [0, 2]$

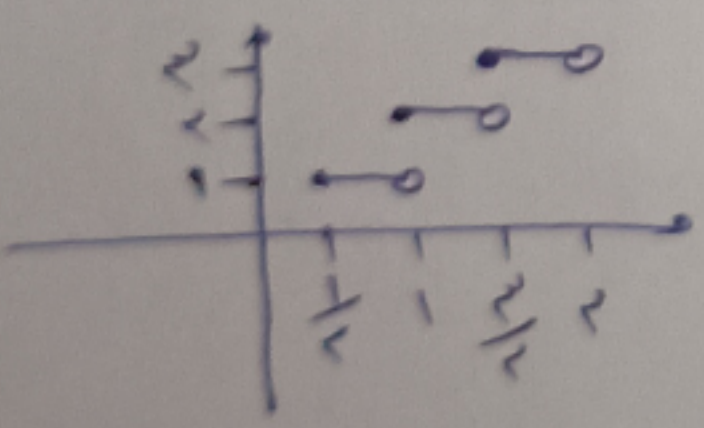
$a = 0 \quad \begin{cases} b + (2 = 0) & b \geq 1 \\ b + (2 = 1) & (2 = -1) \end{cases}$

$g(n) = \sqrt{n^2 + 4} \rightarrow R_g = [2, +\infty)$

$\sqrt{(n-1)^2 + 4} = \sqrt{n^2 - 2n + 5} \rightarrow a = -1, b = 1$

$\Rightarrow y = n-1, -1 \leq n \leq 1 \rightarrow -1 \leq n-1 \leq 0$

$\Rightarrow R_f = [-1, 0]$



۱۰- ۲ باره خط

$n > 2, y > 1 \rightarrow n < 2, y < 1$

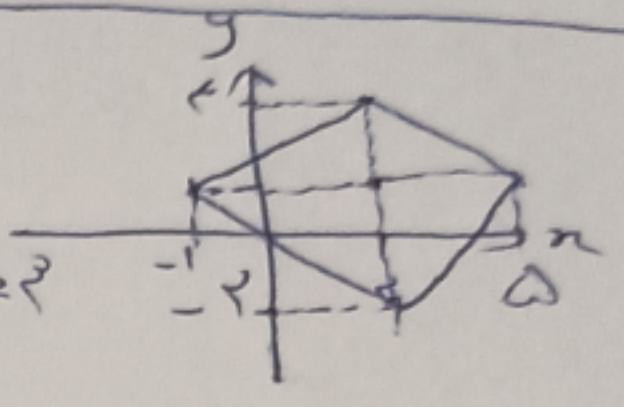
$\rightarrow y = 1 - n$

$n < 2, y > 1 \rightarrow n > 2, y < 1$

$\rightarrow y = n + 1$

$n > 1, y < 1 \rightarrow n < 1, y > 1 \rightarrow y = n - 1$

$n < 1, y < 1 \rightarrow n > 1, y > 1 \rightarrow y = -n$



$n = 1 \rightarrow -\frac{1}{2} + 1 = \frac{1}{2}$

$n = 2 \rightarrow -\frac{2}{2} + 1 = 0$

$n = 3 \rightarrow -1 + 1 = 0$

$n = 4 \rightarrow -2 + 1 = -1$

$n = 5 \rightarrow -3 + 1 = -2$

$9_0 + (-\frac{1}{2})(1 + 2 + \dots + 9)$

$= 9_0 + (-\frac{1}{2})(45) =$

$9_0 - (22.5) =$

$f(n) = n \ln(n) \ln(n)$

$\frac{n \ln(n)}{n+1} = n \ln(n)$

$n \ln(n) = 1 \rightarrow n \ln(n) = 1 \rightarrow n = 1$

$\Rightarrow a = -1, b = 1$

$\frac{-b}{a} = \frac{-1}{1} = -1 \rightarrow f(1) = 1 - 1 = 0$

$f\left(\frac{-1+1}{-1}\right) = f(0) = 0$