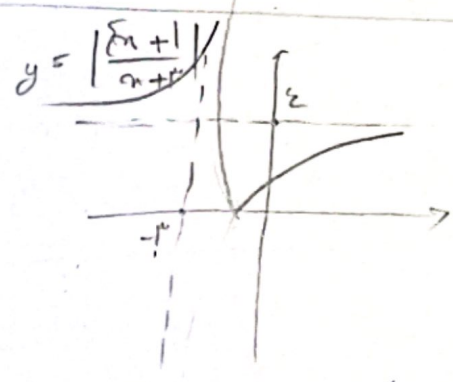
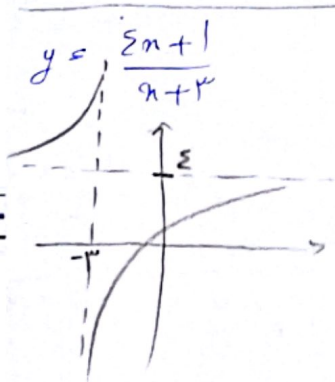
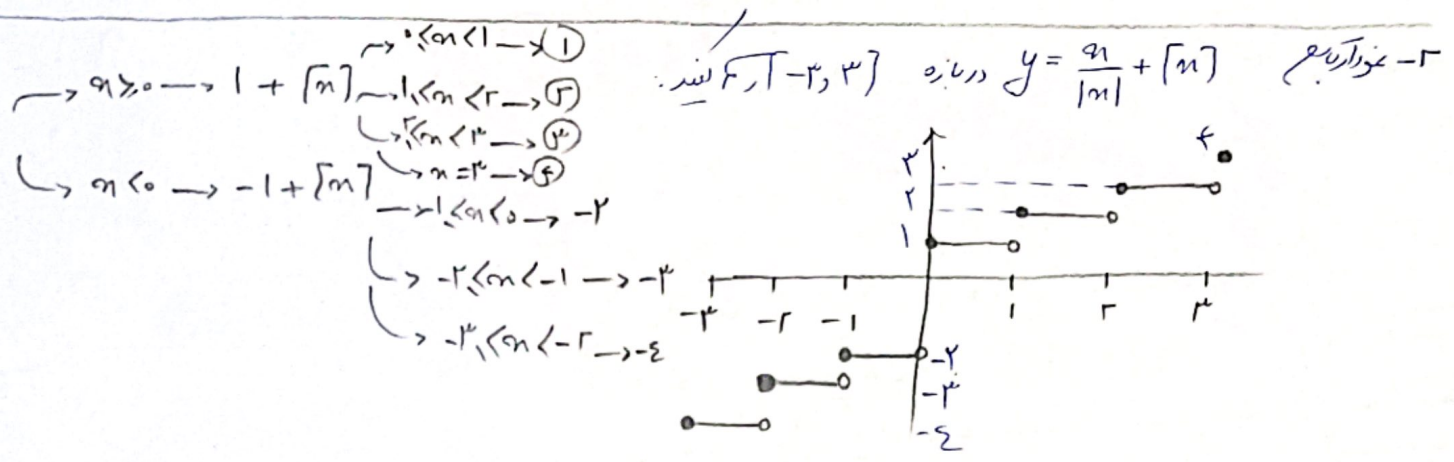


الف) $f(x) = \sqrt{\sin^2(x + \frac{\pi}{2})} - 1$
 $[0, 2] \rightarrow [-1, 1]$

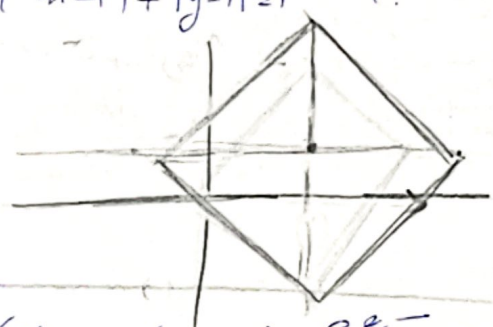
$\rightarrow y(x) = \sqrt{\cos^2} - 1$
 $[-1, 1] \rightarrow [-\sqrt{2}, 1]$



نمودار تابع $y = \left| \frac{x+1}{x+2} \right|$

۵ - $|x-2| + |y-1| = 3$ این معادله را رسم کنید

برای $x \leq 2, y \geq 1$: $y - 1 = 3 - (x - 2) \Rightarrow y = -x + 6$
 برای $x \leq 2, y < 1$: $1 - y = 3 - (x - 2) \Rightarrow y = x - 2$
 برای $x > 2, y \geq 1$: $y - 1 = (x - 2) - 3 \Rightarrow y = x - 4$
 برای $x > 2, y < 1$: $1 - y = (x - 2) - 3 \Rightarrow y = -x + 2$



الف) $f(x) = x + \frac{1}{x} + \sqrt{x+1}$
 $\left(\sqrt{x+\frac{1}{x}} + 1\right)^2 - 1 \rightarrow \min \rightarrow (\sqrt{2}+1)^2 - 1 \rightarrow 2 + \sqrt{2}$
 $R_f = [2 + \sqrt{2}, +\infty)$

۶ - $y = (-3 - \sin)(1 + \sin)$
 $-\sin^2 + 2\sin + 3$
 $\sin = 1 \rightarrow 2$
 $\sin = -1 \rightarrow 0$
 $\sin = \frac{2}{3} \rightarrow 2$
 $R_f = [0, 2]$

۷ - دانسته‌ها: $\frac{1}{3}x + 10$ ، x عدد صحیح، x عدد صحیح، $\frac{1}{3}(1+7+\dots+9) + 10 \times 9 \rightarrow 75$

$\sqrt{an^2+bn+c}$ $f(x) = \sqrt{ax^2+bx+c}$ $f(n) = \sqrt{an^2+bn+c}$ $f(x) = \sqrt{ax^2+bx+c}$

$an^2+bn+c \rightarrow a=0 \rightarrow bn+c=0 \rightarrow 1b+c=0 \rightarrow b = -\frac{c}{1} \rightarrow \frac{1-c}{1} = -\frac{c}{1}$

$\sqrt{n^2+2}$

$(1, +\infty)$

$b+c=1 \rightarrow b = \frac{1-c}{1}$

$b > 0$

$1-2c > -2c$

$c = -2$

$b = 1$

$f\left(\frac{a+b}{2}\right)$ $f(x) = \sqrt{ax^2+bx+c}$ $f(n) = \sqrt{an^2+bn+c}$

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

$P = (-1, +\infty) - \{1\}$

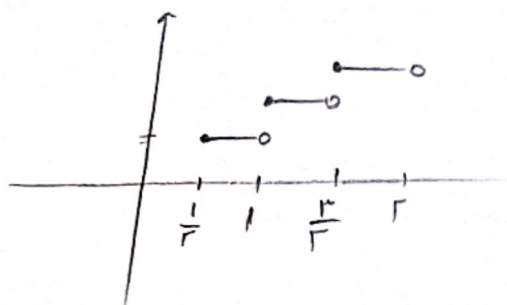
$f\left(\frac{2+(-2)}{-1}\right) = f(-1) \rightarrow 1 + \frac{3}{1}$

$f(x) = \sqrt{ax^2+bx+c}$ $f(n) = \sqrt{an^2+bn+c}$

$\sqrt{n^2+an^2+bn-1}$ $(n-2)^2 \rightarrow n^2-4n+4$

$n-2 \rightarrow -4 \rightarrow -1 \rightarrow 1 \rightarrow 10$

$y = \left\lfloor n \right\rfloor + \left\lfloor n + \frac{1}{n} \right\rfloor$ $f(x) = \sqrt{ax^2+bx+c}$



$\frac{1}{2} < n < 1 \rightarrow 0 + 1 \rightarrow 1$

$1 < n < \frac{3}{2} \rightarrow 1 + 1 \rightarrow 2$

$\frac{3}{2} < n < 2 \rightarrow 1 + 2 \rightarrow 3$

$\frac{1}{2} < n < 2$