

19, 175

DATE / /

SUBJECT:

گرافیک

شیرینا جعفری - شیرینا جعفری

الف) $f(n) = r \sin^k \left(n + \frac{\pi}{k} \right) - 1$ $-1 \leq \sin \left(n + \frac{\pi}{k} \right) \leq 1$ (2) (1)

$0 \leq \sin^k \left(n + \frac{\pi}{k} \right) \leq 1$ $0 \leq r \sin^k \left(n + \frac{\pi}{k} \right) \leq r$ $\rightarrow -1 \leq r \sin^k \left(n + \frac{\pi}{k} \right) - 1 \leq 1$

$R_f = [-1, 1]$

$\rightarrow g(n) = r \cos^k n - r$ $-1 \leq \cos n \leq 1$ $-1 \leq \cos^k n \leq 1$

$-r \leq r \cos^k n \leq r$ $-r \leq r \cos^k n - r \leq -1$

$R_g = [-r, -1]$

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

$n = k \rightarrow [n] = k \rightarrow y = 1 + k = k$ (2) (1, 175)

$-k \leq n < -1$ $[n] = -k \rightarrow y = -1 - k = -k$

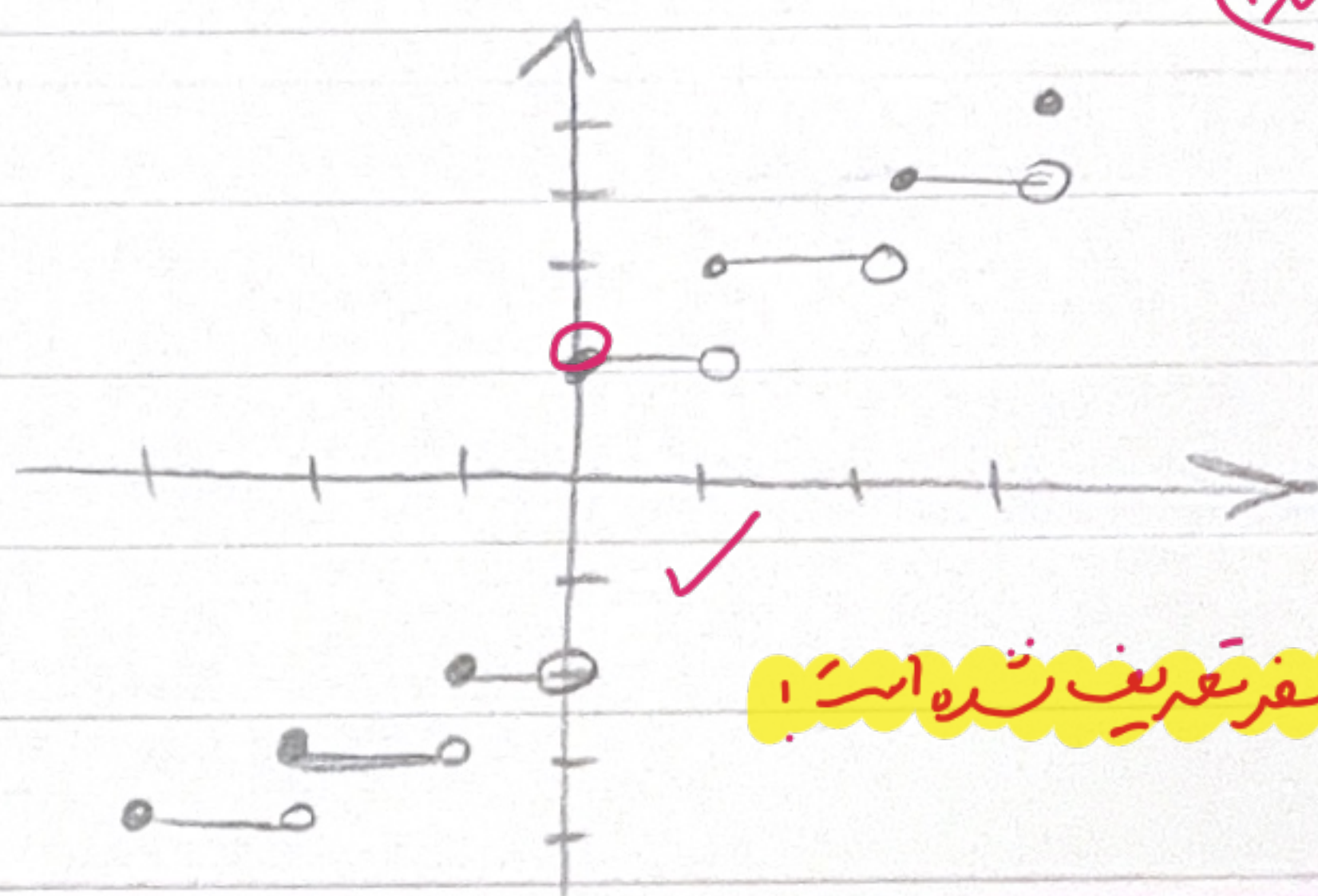
$-1 \leq n < -1$ $[n] = -1 \rightarrow y = -1 - 1 = -2$

$-1 \leq n < 0$ $[n] = -1 \rightarrow y = -1 - 1 = -2$

$0 \leq n < 1$ $[n] = 0 \rightarrow y = 1$

$1 \leq n < 2$ $[n] = 1 \rightarrow y = 1 + 1 = 2$

$2 \leq n < 3$ $[n] = 2 \rightarrow y = 1 + 2 = 3$



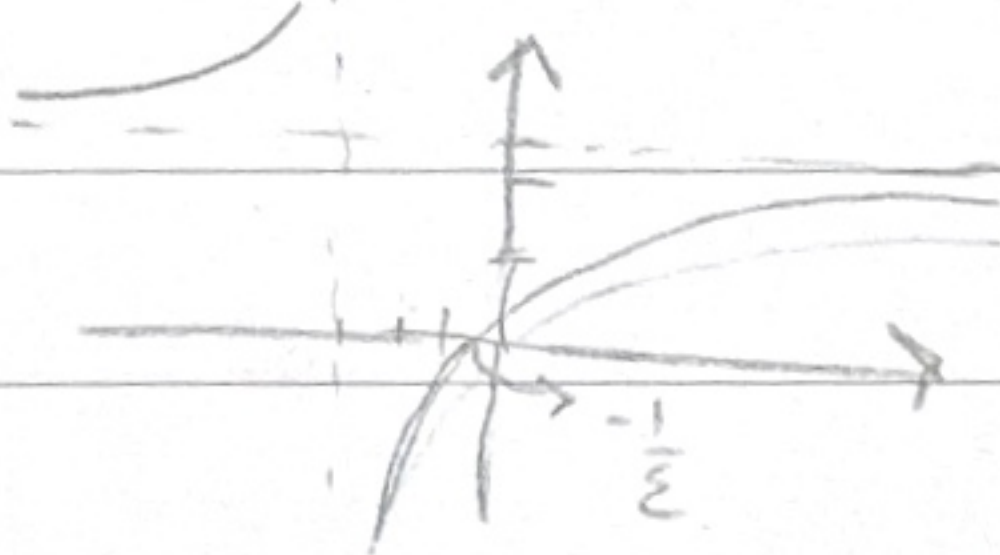
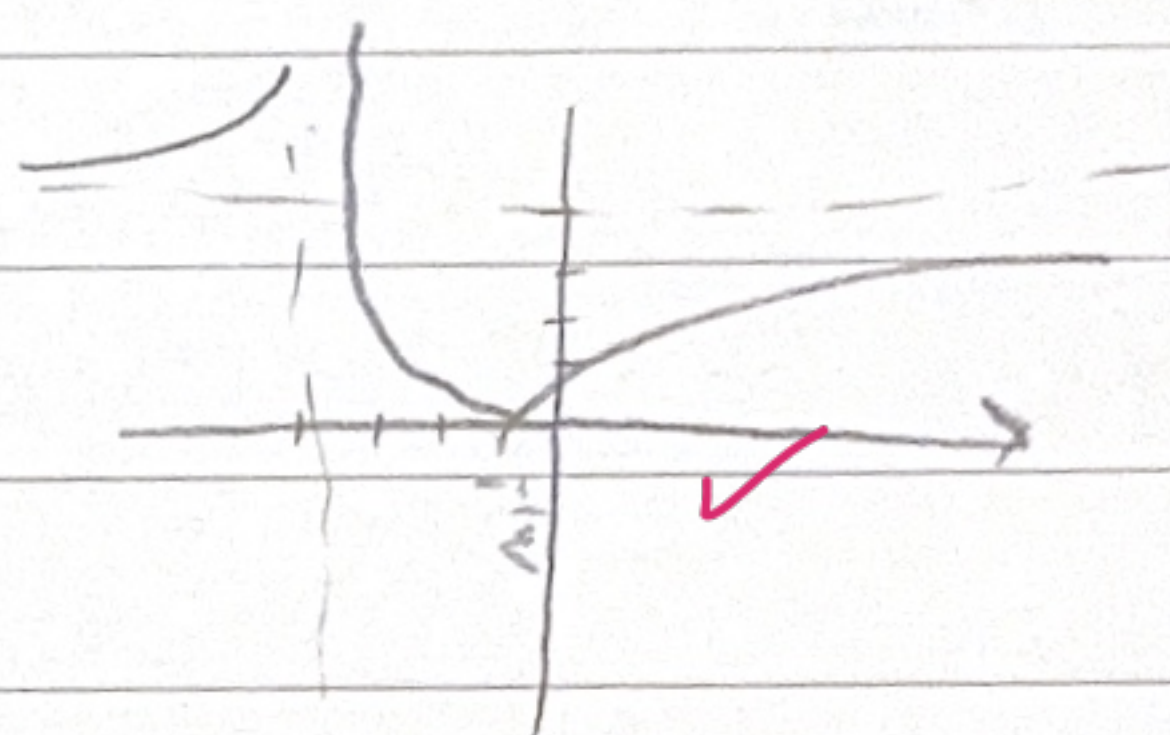
صفر تعریف شده است

$y = \left| \frac{kx+1}{x+k} \right|$

$y = \frac{kx+1}{x+k}$

$\frac{kx+1}{x+k} = 0 \rightarrow x = -\frac{1}{k}$

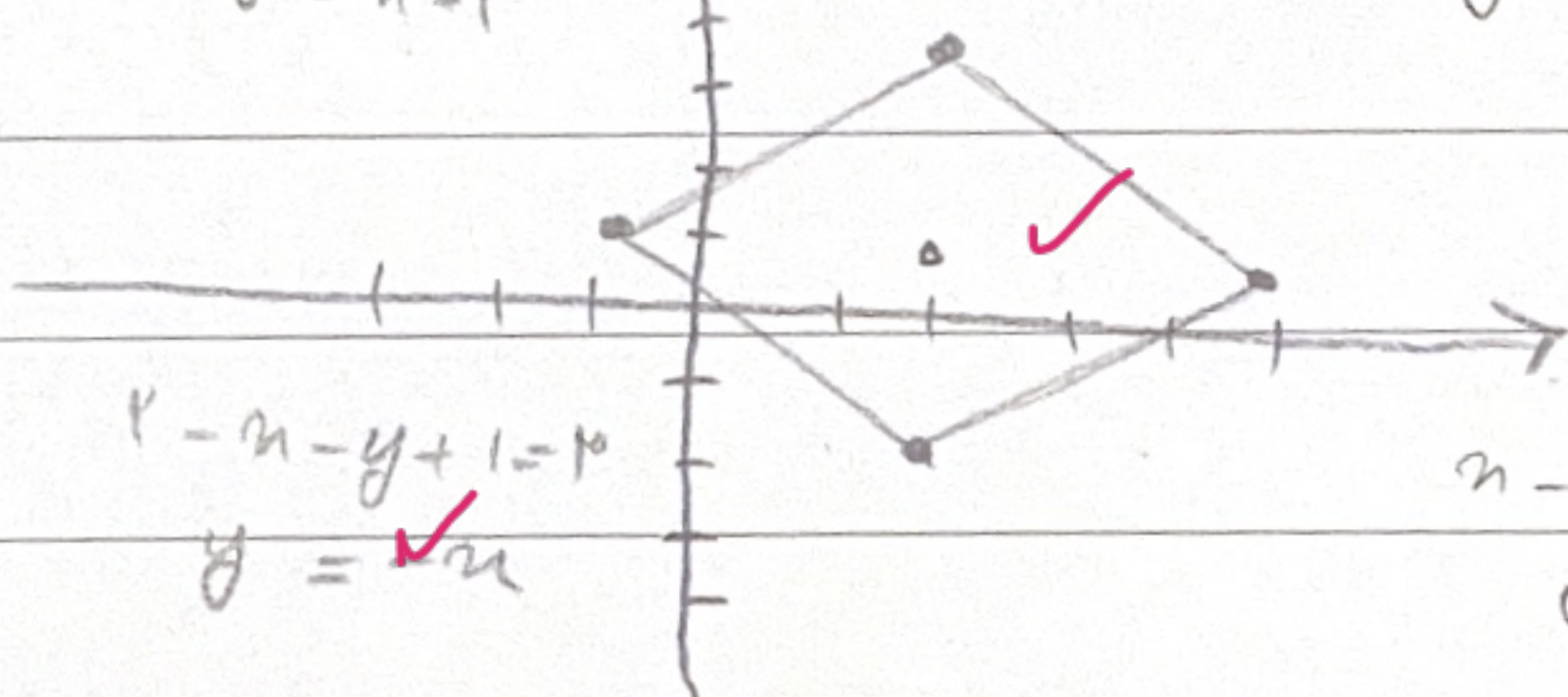
فرد و زوج (در صورت)



$|x-1| + |y-1| = k$

$-x+k+y-1=k$ $y=x$

$x-k+y-1=k$ $y=2k-x$



$x-k-y+1=k$ $y=x$

$x-k-y+1=k$ $y=x-k$

ب) $f(n) = n + \frac{1}{n} + r \sqrt{n + \frac{1}{n}}$ $n > 0$ $n + \frac{1}{n} > 1$

$f(n) = \left(\sqrt{n + \frac{1}{n}} \right)^2 + r \sqrt{n + \frac{1}{n}} \Rightarrow \sqrt{n + \frac{1}{n}}$

$R_f = [r + r\sqrt{r}, +\infty)$

$\frac{b}{ka} = \frac{-r}{-r} = 1$

$\rightarrow y = (r - \sin n)(1 + \sin n)$

$y = -\sin^2 n + r \sin n + r$ $\rightarrow \sin n$

$R_f = [r, r]$

$\frac{b}{ka} = \frac{-r}{-r} = 1$

$$f(n) = -\frac{1}{n}n + 10 \quad D_f = \{1, \dots, 9\}$$

$$= -\frac{1}{1} \times 1 + 10 + -\frac{1}{2} \times 2 + 10 + \dots + -\frac{1}{9} \times 9 + 10 = -\frac{1}{9} (1+2+\dots+9) + 9 \times 10 = -\frac{1}{9} \times 45 + 90 = -5 + 90 = 85$$

$$S_{109} = \frac{9 \times 10}{1} = 90$$

$$-10 + 90 = 80$$

$$f(n) = \sqrt{an^2 + bn + c} \rightarrow D_f = [r, +\infty) \quad a=0 \rightarrow f(n) = \sqrt{bn+c}$$

$$x-1 \begin{cases} rb+c=0 \\ rb+c=1 \end{cases} \quad a=0 \quad b=1 \quad c=-1$$

$$\begin{cases} rb+c=0 \\ rb+c=1 \end{cases} \quad b=1 \quad c=-1$$

$$f(n) = \sqrt{bn^2 + an + c} \rightarrow g(n) = \sqrt{n^2 + 1} \rightarrow y' = n^2 + 1 \quad \text{ext} \left| \frac{-b}{2a} = 0 \right. \\ y = 1$$

$$Ry' = [r, +\infty) \rightarrow Rg = \sqrt{[r, +\infty)} \rightarrow [r, +\infty)$$

$$f(n) = \frac{n^2 - kn}{n+r} \Rightarrow \frac{n(n-k)}{n+r} \rightarrow \frac{n(n-k)(n+r)}{n+r} \rightarrow P(n) = n^2 - kn \quad (r) \quad (1)$$

$$f(n) = -r \rightarrow f(-r) = (-r)^2 - k(-r) = 1 \quad n^2 - kn = 1 \quad (n+r)(n-k) = 0$$

$$Rf(n) \Rightarrow P(n) = n^2 - kn \rightarrow \text{ext} \left| \begin{array}{l} n = -\frac{b}{2a} = 1 \\ y = 1 - r \times 1 = -1 \end{array} \right. \rightarrow D_f = [r, +\infty) \quad \begin{cases} a > 0 \\ \text{min} \end{cases} \quad \begin{cases} a = -r \\ b = k \end{cases}$$

$$y = \sqrt[n]{a^n + an^2 + bn - 1} \xrightarrow{\text{get } r} y = \sqrt[n]{(n-r)^n} \rightarrow y = \sqrt[n]{n^n - 9n^2 + 14n - 1} \quad a = -9 \quad b = 14 \quad (r) \quad (9)$$

$$Dy = [a, b] \rightarrow Dy = [-4, 14] \rightarrow -4 \leq n \leq 14 \rightarrow -1 \leq n - r \leq 10 \quad (r) \quad (10)$$

$$Rf = [-4, 14] \quad y = \sqrt[n]{(n-r)^n} \rightarrow y = n - r \leftarrow$$

$$y = [n] + [n + \frac{1}{r}]$$

$$\frac{1}{r} \leq n < 1 \rightarrow 1 \leq n + \frac{1}{r} < \frac{r}{r} \Rightarrow [n] = 0 \quad [n + \frac{1}{r}] = 1 \rightarrow 0 + 1 = 1$$

$$1 \leq n < \frac{r}{r} \rightarrow \frac{r}{r} \leq n + \frac{1}{r} < 2 \Rightarrow [n] = 1 \quad [n + \frac{1}{r}] = 1 \rightarrow 1 + 1 = 2$$

$$\frac{r}{r} \leq n < 2 \rightarrow 2 \leq n + \frac{1}{r} < 2 \Rightarrow [n] = 1 \quad [n + \frac{1}{r}] = 2 \rightarrow 1 + 2 = 3$$

$$1 \leq n < 2$$

