

دوازدهم ریاضی

19, 5

عاریضه فیاض

-1.

$$f(x) = r \sin^2\left(x + \frac{\pi}{4}\right) - 1$$

$$-1 \leq \sin^2\left(x + \frac{\pi}{4}\right) \leq 1 \xrightarrow{\times r} -r \leq r \sin^2\left(x + \frac{\pi}{4}\right) \leq r$$

$$\xrightarrow{-1} -1 \leq f(x) \leq r$$

$$\Rightarrow R_f = [-1, r] \checkmark$$

$$g(x) = r \cos^2 x - 1$$

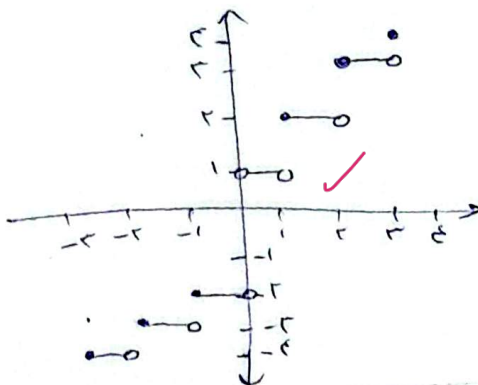
$$-1 \leq \cos^2 x \leq 1 \xrightarrow{\times r} -r \leq r \cos^2 x \leq r \xrightarrow{-1} -r-1 \leq r \cos^2 x - 1 \leq r-1$$

$$\Rightarrow R_g = [-r-1, r-1] \checkmark$$

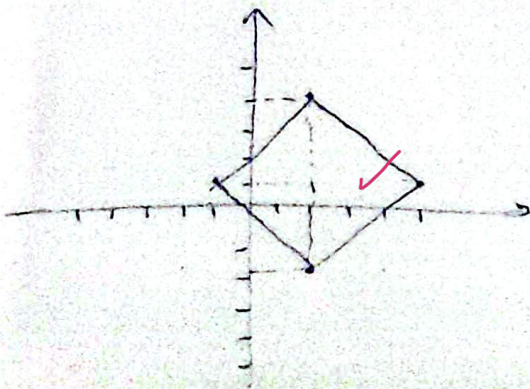
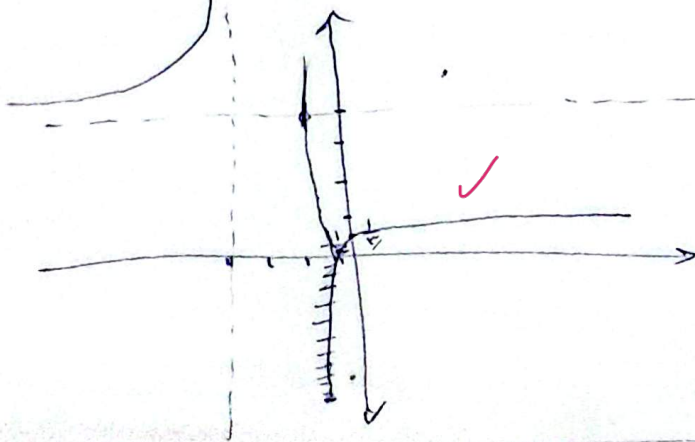
$$y = \frac{x}{|x|} + [x] \quad [-r, r]$$

(2) -2

$$\begin{cases} x > 0 \rightarrow 1 + [x] \\ x < 0 \rightarrow [x] - 1 \end{cases}$$



$$y = \left| \frac{x+1}{x+r} \right| \quad (2) -3$$



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

مركز (1, 1)

$$y = \begin{cases} x+1 & x \leq 1, y \geq 1 \\ -x+1 & x \geq 1, y \geq 1 \\ x-1 & x \geq 1, y \leq 1 \\ -x-1 & x \leq 1, y \leq 1 \end{cases}$$

صفحة آخر...

دراز هم در نظر
 الف) $f(u) = u + \frac{1}{u} + r\sqrt{u + \frac{1}{u}}$

کار و مفید

(2) - 5

$$u + \frac{1}{u} \geq r \rightarrow t = u + \frac{1}{u} \rightarrow t \in [r, +\infty)$$

$$y = t + r\sqrt{t} \rightarrow t \geq r \rightarrow y_{\min} = r + r\sqrt{r}$$

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

ب) $y_2(r - \sin u)(1 + \sin u) = -\sin^2 u + r \sin u + r$

$t = \sin u$
 $-1 \leq \sin u \leq 1$

$\sin u = -1 \rightarrow -1 - r + r = -r$
 $\sin u = 0 \rightarrow 0 + 0 + r = r$
 $\sin u = 1 \rightarrow -1 + r + r = r - 1$
 $\frac{-b}{2a} = \sin u = \frac{-r}{-2} = 1$

$$R_f = [0, r]$$

$D_f = \{1, 2, 5, \dots, 9\}$ $f(u) = -\frac{1}{r}u + 10$

(2) - 4

$u=1 \rightarrow -\frac{1}{r} + 10 = \frac{r9}{r}$

$u=8 \rightarrow \frac{r0}{r}$

$u=2 \rightarrow \frac{r8}{r}$

$u=7 \rightarrow \frac{r1}{r}$

$u=5 \rightarrow \frac{r9}{r}$

$u=6 \rightarrow \frac{r2}{r}$

$u=4 \rightarrow \frac{r4}{r}$

$u=3 \rightarrow \frac{r5}{r}$

$$\frac{r9}{r} + \frac{r8}{r} + \frac{r7}{r} + \frac{r6}{r} + \frac{r5}{r} + \frac{r4}{r} + \frac{r3}{r} + \frac{r2}{r} + \frac{r1}{r} = 10$$

$f(u) = \sqrt{au^2 + bu + c}$

$[r, +\infty)$

$a > 0, b > 0$

$\sqrt{bu + c} \Rightarrow r b + c = 1 \Rightarrow -r b = c \Rightarrow f(r) = 1$

$c = -r b$

$b = 1$
 $c = -r$

$y(u) = \sqrt{bu^2 + au - rc} = \sqrt{\frac{u^2 + c}{r}}$

$R_f = [r, +\infty)$

$f(x) = \frac{x^2 - 6x}{x + r}$

$x \neq -r$

$\frac{x^2 - 6x}{x + r} = 1$

(2) - 1

$\frac{x(x - 6)}{x + r} = \frac{x(x - r)(x + r)}{(x + r)} = x(x - r) \rightarrow x(x - r) = 1$

$x^2 - rx - 1 = 0 \rightarrow (x + r)(x - r) = 0 \rightarrow x = -r$

$D_f = \mathbb{R} - \{a, b\}$

$x^2 - rx = (x - r)^2 - r^2$

$R_f = [r, +\infty)$

$f\left(\frac{a+b}{rc}\right) = \frac{c-r}{-r} = 1$ $f(-1) = (-1)^2 + r = 1$

$$y = \sqrt{n^2 + an^2 + bn - 1}$$

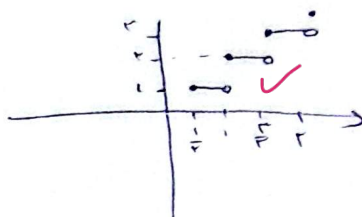
$$n^2 + an^2 + bn - 1 = (n - 1)^2$$

$$(n - 1)^2 = n^2 - 2n + 1 \quad a = -2 \quad b = 1 \checkmark$$

$$y = n - 1 \quad D_f = [-1, 1] \rightarrow R_f = [-1, 1] \checkmark$$

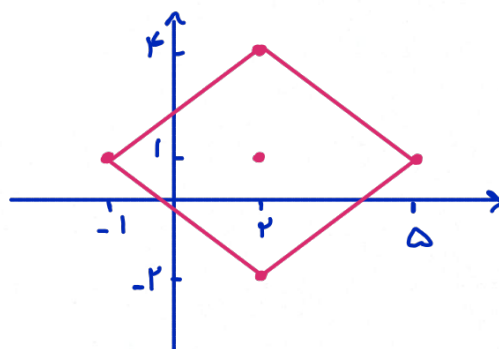
$$y = [x] + [x + \frac{1}{t}] \quad (\frac{1}{t} > 1)$$

$$\begin{cases} \frac{1}{t} \leq x < 1 \rightarrow 1 \\ 1 \leq x < \frac{t}{t} \rightarrow 2 \\ \frac{t}{t} \leq x < 2 \rightarrow 3 \end{cases}$$



(1, 2) ✓

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



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