

19, 25

تکلیف 6

ملا س: (وارش هم (A)

نام خانوادگی: غزل عباسی

1 (2)

2 (2)

3 (1)

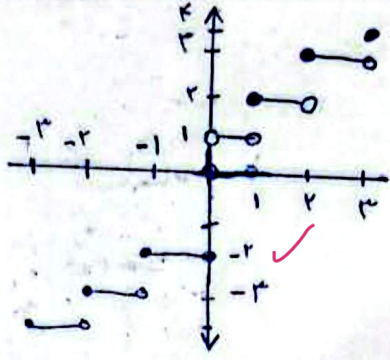
4 (1)

5 (1, 2)

6 (2)

الف) $-1 \leq \sin x \leq 1 \Rightarrow 0 \leq \sin^2 x \leq 1 \Rightarrow -1 \leq f(x) \leq 1$ ✓
 ب) $-1 \leq \cos x \leq 1 \Rightarrow -1 \leq \cos^2 x \leq 1 \Rightarrow -1 \leq g(x) \leq 1$ ✓

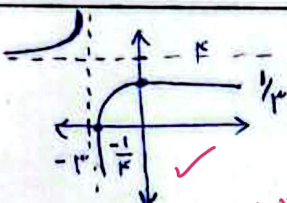
$f(x) = \begin{cases} 1 + [x] & x \geq 0 \\ [x] & x \neq 0 \Rightarrow \text{در فاصله نیست} \\ -1 + [x] & x < 0 \end{cases}$



بازه: $[-3, 3]$

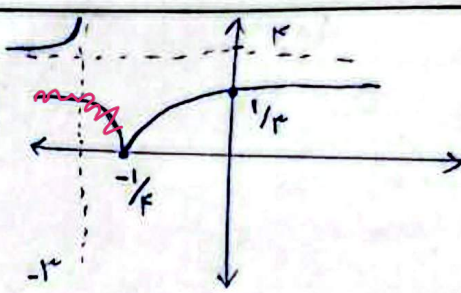
گوشه مربع

$\frac{x+1}{x+2}$



پایین ترین نقطه بلاه

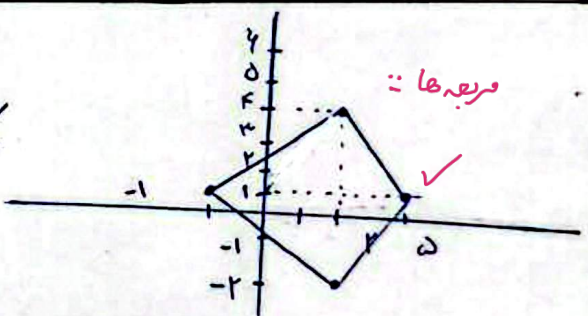
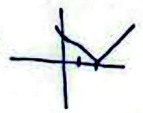
$\frac{x+1}{x+2}$



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

$y = \begin{cases} y \geq 1 & y = 2 - |x-1| \quad I \\ y < 1 & y = -2 + |x-1| \quad II \end{cases}$

ضلع بندی؟



مربعها =

الف) $x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}} \quad x + \frac{1}{x} \geq 0 \quad x > 0 \quad \min t = \sqrt{x} \Rightarrow f_{\min} = (\sqrt{x})^2 + 2\sqrt{x} = x + 2\sqrt{x}$
 $\sqrt{x + \frac{1}{x}} \geq \sqrt{x} \quad \sqrt{x + \frac{1}{x}} = t \quad t^2 + 2t \Rightarrow \frac{-b}{2a} = -1 \quad \text{که منجر به} \rightarrow [2 + 2\sqrt{2}, +\infty)$

ب) $y = (3 - \sin x)(1 + \sin x) = -\sin^2 x + 2\sin x + 3$
 $\begin{cases} 1: 3 \\ -\frac{b}{2a}: -1 \end{cases} \quad R = [-1, 3]$

$1 \Rightarrow 9 \frac{r}{r} \quad 4 \Rightarrow 16$
 $2 \Rightarrow 9 \frac{1}{r} \quad 5 \Rightarrow 25 \frac{r}{r}$
 $3 \Rightarrow 9 \quad 6 \Rightarrow 36 \frac{1}{r}$
 $4 \Rightarrow 16 \frac{r}{r} \quad 7 \Rightarrow 49$
 $5 \Rightarrow 25 \frac{1}{r}$

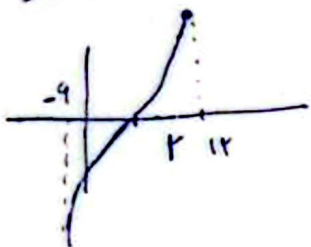
$9 \frac{r}{r} + 9 \frac{1}{r} + 9 + 16 \frac{r}{r} + 16 \frac{1}{r} + 16 + 25 \frac{r}{r} + 25 \frac{1}{r} + 25 = 100$

$f(x) = -\frac{1}{x} + 10$

$\text{جواب: } a \neq 0 \quad f(x) = \sqrt{bx+c} \quad 2b+c=0 \quad 2b=-c \quad 2b+2b=1 \quad b=1 \quad c=-2$
 $g(x) = \sqrt{x^2+2} \Rightarrow [2, +\infty) \checkmark = R_g \text{ كامل بنویس}$

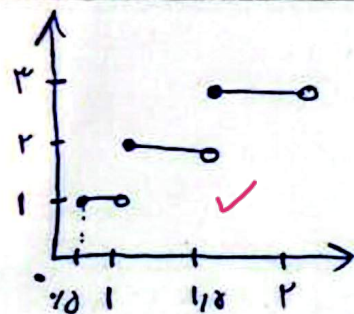
V
(1, 1/2)

$\text{جواب: } \sqrt[3]{(x-2)^3} = x-2 \quad x^3 - 9x^2 + 12x - 1 \quad a = -9 \quad b = 12 \quad D = [-4, 12]$
 $x = -4 \Rightarrow -1 \quad R = [-1, 1] \checkmark$
 $x = 12 \Rightarrow 1$



A
(2)

$\log_2 \frac{1}{2} \text{ if } x < 1 \Rightarrow = 1$
 $1 \text{ if } x < 1/2 \Rightarrow = 2$
 $1/2 \text{ if } x < 2 \Rightarrow = 3$



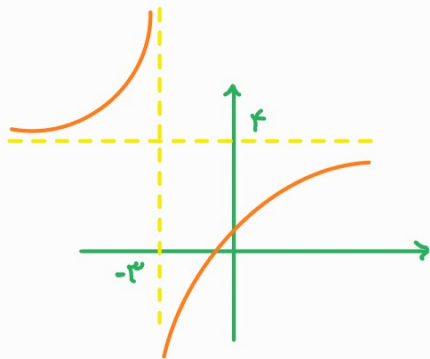
$\log_2 \frac{1}{2} = -1$

I.
(2)

$f(x) = \frac{x^2 - 2x}{x+2} = \frac{x(x-2)(x+2)}{x+2} = x^2 - 2x \quad \frac{-b}{2a} = \frac{2}{2} = 1 < 1 \text{ مغلقة رأسه!}$
 $x^2 - 2x = 1 \Rightarrow (x-2)(x+2) = 0 \quad x \neq 2, -2 \checkmark \quad a = -2 \quad b = 2$
 $f\left(\frac{2-2}{2}\right) = f(1) = 1-2 = -1$

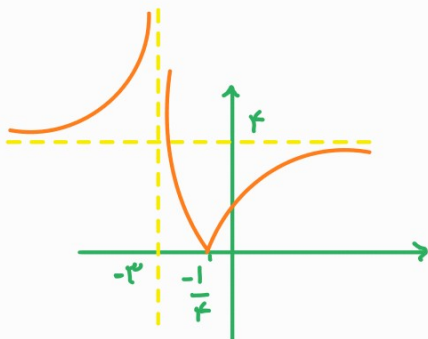
A
(1)

$$y = \frac{x+1}{x+3}$$

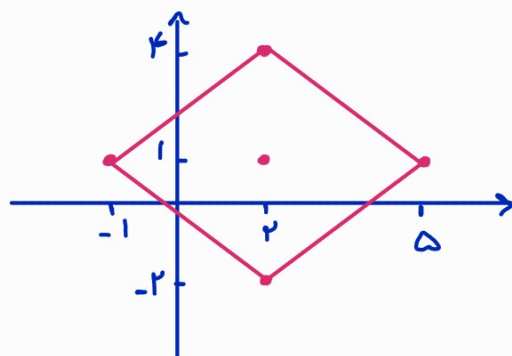


قدر مطلق دور خط، مقترها رو پات میسنه قدرینه
میسنه بالات

$$y = \left| \frac{x+1}{x+3} \right|$$



$$\begin{cases} x > 2, y > 1 \rightarrow y = -x + 4 \\ x > 2, y \leq 1 \rightarrow y = x - 4 \\ x \leq 2, y > 1 \rightarrow y = x + 2 \\ x \leq 2, y \leq 1 \rightarrow y = -x \end{cases}$$



$$y = (3 - \sin x)(1 + \sin x) = -\sin^2 x + 2\sin x + 3$$

$$\begin{cases} \sin x = -1 \rightarrow y = 0 \\ \sin x = 1 \rightarrow y = 4 \\ \sin x = -\frac{b}{2a} = 1 \rightarrow y = 4 \end{cases} \Rightarrow R_f = [0, 4]$$

۷- با توجه به دامنه، زیر رادیکال یک خط با شیب مثبت بوده یعنی $a = 0$ است و نقطه $(2, 0)$ هم در معادله خط صدق میکنند...

$$\begin{cases} (2, 0) \rightarrow 2b + c = 0 \\ (2, 1) \rightarrow 2b + c = 1 \end{cases} \rightarrow b = 1, c = -2$$

$$g(x) = \sqrt{x^2 + 4} \rightarrow \text{ext} \Big|_x^0 \Rightarrow R_g = \sqrt{[2, +\infty)} = [2, +\infty)$$

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

-۸

$$n^2 - 2n \neq 8 \rightarrow \begin{cases} n \neq -2 \\ n \neq 4 \end{cases}$$

۸=۸ در برد تابع نیست یعنی:

$$D_f = \mathbb{R} - \{-2, 4\} \quad \text{پس دامنه پذیر است با:}$$

$$f(n) = n^2 - 2n \rightarrow \text{ext} \Big|_{-1}^1 \Rightarrow R_f = [-1, +\infty) - \{8\} \quad \text{حالا بیایم سراغ برد!}$$

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