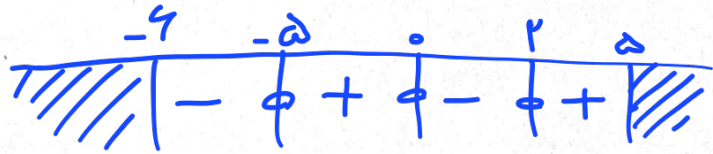
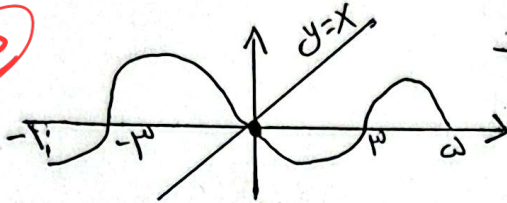


$$x f(x) \geq 0 \quad [-\infty, 0] \cup [2, \infty]$$



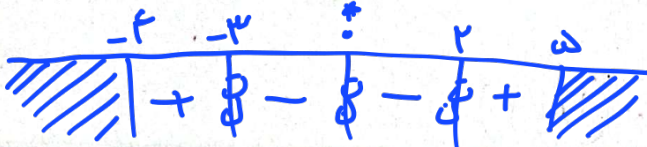
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$$\frac{-x}{f(x)} \geq 0 \Rightarrow \frac{x}{f(x)} \leq 0, \quad f(x) \neq 0$$

$$(-3, 0) \cup (0, 2)$$

۱) (د صمیم عضو داسن) $[-2, -1] \cup [1, 2]$



۲

$$\begin{aligned} f(2) - 2f(2) &= (2)^2 - 3(2) + 4 \\ -f(2) &= 4 - 6 + 4 \\ -f(2) &= 2 \\ f(2) &= -2 \end{aligned}$$

$$\begin{aligned} f(-2) - 2f(-2) &= (-2)^2 - 3(-2) + 4 \\ f(-2) - 2(-2) &= 4 + 6 + 4 \\ f(-2) + 4 &= 14 \\ f(-2) &= 14 - 4 = 10 \end{aligned}$$

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$$\begin{aligned} f(f(5)) &= 5 - \sqrt{9} = 5 - 3 = 2 \\ \downarrow \\ f(2) &= 4 + 3 = 7 \end{aligned}$$

$$7 + 2 = 9$$

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$$\begin{aligned} f(f(1)) &= 5 \\ f(5) &= 2 \end{aligned}$$

۴

$$f(x) = ax^2 - bx + 2 = f(x-1) \quad f(x) = 7x + 2$$

۱۵

$$x=2 \quad (-2)^2 - (-2) + 2 = 1 - 14 = -13$$

$$a - b = -13 - (-3) - 2 + 2 = -10 \quad a - b = -1$$

$$\begin{cases} 4a = 4 \\ a + 2 = 2 \end{cases} \rightarrow \begin{cases} a = 1 \\ b = 2 \end{cases}$$

۵

$$\frac{w - \cancel{r\sqrt{w}} + r + \cancel{r\sqrt{w}} - 1 + w}{w - \cancel{r\sqrt{w}} + r + \cancel{r\sqrt{w}} - 1 + w} = \frac{w + r + w - 1}{w + r - 1 + w} = \frac{r}{4} = \frac{r}{w}$$

(2)

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

$f(w) = w^2 + r$

$$f(-w) = 11$$

⑥

$$\frac{\left(\frac{-1}{w}\right)^2 + 1}{\left(\frac{-1}{w}\right)^2} = \left(-\frac{1}{w}\right)^2 + 1 = -\frac{r}{4} + 1 = -\frac{rf}{4} + \frac{4}{4} = \boxed{-\frac{aw}{4}}$$

$$F = (2, 0), (1, -2), (0, 2), (7, 1)$$

$$G = (2, \sqrt{5}), (1, \sqrt{8}), (0, 3)$$

الف) $(2, 0), (1, -\frac{r}{\sqrt{8}}), (0, \frac{r}{w})$

ب) $(1, \frac{\sqrt{8}}{-r}), (0, \frac{r}{r})$

(2)

الف) $(2, 2), (3, 1), (-5, 4), (1, 4)$

ب) $(2, 2), (3, 5), (-5, 3), (1, -1)$

ج) $(2, 2), (3, 4), (-5, 3), (1, -3)$

د) $\{(1, 1), (\frac{3}{r}, 4), (-\frac{5}{r}, 2), (\frac{1}{r}, -2)\}$

الف) $(2, 2), (1, 4), (3, 2)$

ب) $(2, 2), (3, -2)$

(2)