

$$D_{f(x)} = [-4, 2]$$

$$-4 \leq x \leq 2 \rightarrow -2 \leq x \leq 4 \rightarrow \boxed{-\frac{2}{x} \leq x \leq \frac{4}{x}}$$

سوال ۱

$$D_{f(x-2)} = [-4, 2]$$

$$-4 \leq x \leq 2$$

$$-12 \leq x \leq 6$$

$$-12 \leq x-5 \leq 6$$

$$\boxed{-12 \leq x \leq 6}$$

$$f(x) = x + \sqrt{x-2}$$

$$\xrightarrow{\text{دو دامنه را به هم اضافه کنیم}} y = x-2 + \sqrt{x-2-2}$$

سوال ۲

$$y = x-2 + \sqrt{x-4}$$

اگر این نام را به $y=x$ قرار دهیم
بعضی موارد که باز هم حل به ضرر با $y=x$ بگیریم

$$\rightarrow x-2 + \sqrt{x-4} = x \rightarrow 2 = \sqrt{x-4} \rightarrow 4 = x-4 \rightarrow x = 8$$

$$y = 8-2 + \sqrt{8-4} = 6 + 2 = 8 \xrightarrow{\text{x و y}} \boxed{(8, 8)}$$

$$g(x) = 2 f(3x+1)$$

$$\xrightarrow{\text{تغییر دامنه}} f(x)$$

سوال ۳

$$\begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

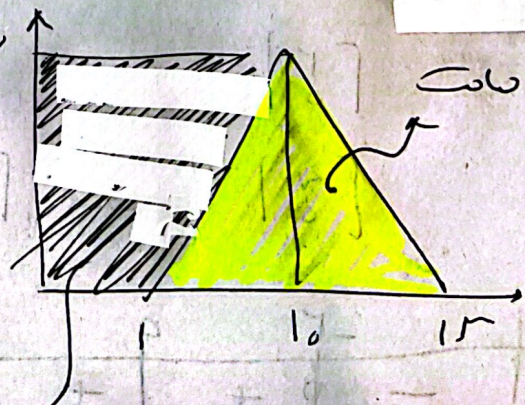
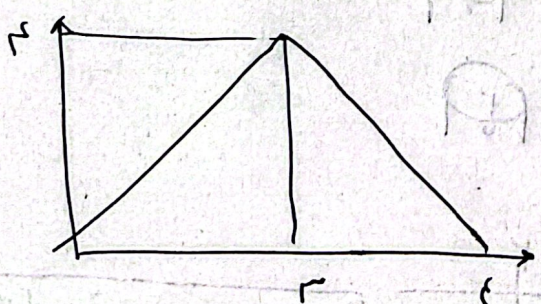
$$\begin{bmatrix} 1 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} 4 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} 13 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} 4 \\ 4 \end{bmatrix}$$

$$\begin{bmatrix} 10 \\ 4 \end{bmatrix}$$



$$\text{مساحت} = \frac{4 \times 15}{2} = 30$$

۱۲

$$x - \frac{a}{r} = r \rightarrow x - a = r \rightarrow x = r + a$$

سوال ۴

$$y = a + r f\left(\frac{x-a}{r}\right) \rightarrow A' \quad y = rx - a$$

$$y = a + r(-r) \rightarrow y = a - r$$

$$rx - a = a - r \rightarrow rx = a + r \rightarrow x = \frac{a}{r} + 1$$

$$\frac{a}{r} + 1 = a + r \rightarrow -r = \frac{a}{r} \rightarrow a = -r$$

$$y = -f(x-r) \rightarrow y = f(x) \rightarrow y = \frac{1}{r}f(r-x)$$

سوال ۵

$$\begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} -r \\ 0 \end{bmatrix}$$

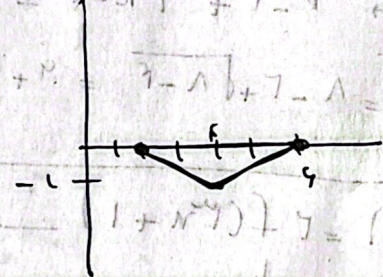
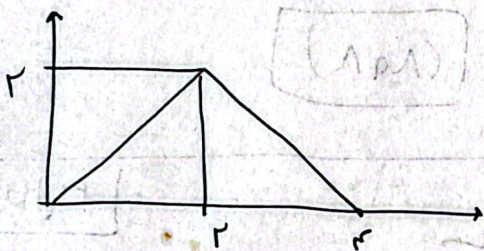
$$\begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} r \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} -r \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} r \\ 0 \end{bmatrix}$$



$$y = \sqrt{-(x+r)f(rx-1)} \rightarrow -(x+r)f(rx-1) \geq 0$$

سوال ۶

$$\begin{bmatrix} -1 \\ 0 \end{bmatrix} \xrightarrow{x \leq 0} \begin{bmatrix} 0 \\ 0 \end{bmatrix} \rightarrow \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} r \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} r \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

	$x+r$	$-r$	0	1	r
$x+r$	-	+	+	+	+
$f(rx-1)$	-	-	+	-	+
کل	+	-	+	-	+

$$x \leq 0 \rightarrow \text{حل} = [-r, 0] \cup [1, r]$$

$$f(x) = |2x - 3| + 1$$

غیر اس و اس

طول

$$f(x+k) = |2(x+k) - 3| + 1 - 2$$

$$x=0 \rightarrow |2k - 3| - 2 = |2 \times 0 - 3| + 1$$

$$(2k - 3) - 2 = 4 \rightarrow |2k - 3| = 9 \rightarrow 2k - 3 = 9 \rightarrow 2k = 12 \rightarrow k = 6$$

$$k = \frac{9}{2}$$

$$f(x) = \frac{2x - 1}{x + 1} \rightarrow \frac{-2x + 1}{x + 1}$$

وال ۸

$$\frac{-2x + 1}{x + 1} \rightarrow \frac{2 - 2x}{x + 1} \rightarrow \frac{2 - 2x}{x + 1} + k$$

$$\frac{2 - 2x}{x + 1} + k = \frac{2x - 1}{x + 1} \rightarrow \frac{2 - 2x + kx + k}{x + 1} = \frac{(k - 2)x + k + 2}{x + 1}$$

$$(k - 2)x + k + 2 = 2x - 1 \rightarrow (k - 2)x + k + 2 = 2x - 1$$

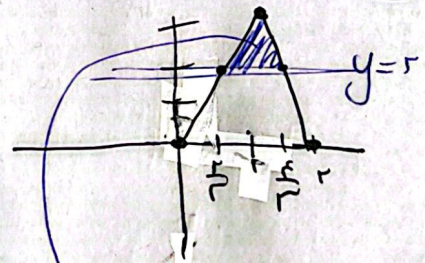
$$k - 2 = 2 \rightarrow k = 4$$

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

وال ۹

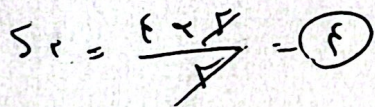
یها ۲ واس و قریب به صفر

$$\begin{aligned} &|1| \rightarrow |2| \rightarrow |3| \rightarrow |4| \rightarrow |5| \\ &|6| \rightarrow |7| \rightarrow |8| \rightarrow |9| \rightarrow |10| \\ &|11| \rightarrow |12| \rightarrow |13| \rightarrow |14| \rightarrow |15| \\ &|16| \rightarrow |17| \rightarrow |18| \rightarrow |19| \rightarrow |20| \\ &|21| \rightarrow |22| \rightarrow |23| \rightarrow |24| \rightarrow |25| \end{aligned}$$



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

سوال ۱۰)



$$\frac{(a-r)^r}{r} = \frac{1}{r} \rightarrow ar + r - (a+1) \rightarrow ar - (a+r) = 0$$

$$f(n) = |x - r| \leq r$$

$$f\left(\frac{1}{a}\right) = f\left(\frac{1}{r}\right) = \left|\frac{1}{r} - r\right| - r = \boxed{\frac{r}{r}}$$