

$$x > 1 \Rightarrow (x-1)^2 = 1 \Rightarrow x = 2, 0$$

$$x < 1 \Rightarrow (x-1)^2 = -1 \text{ غلط}$$

$$x = 2 \text{ قی } \checkmark$$

۱ ریشه $\checkmark$

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الف) $-2 < \frac{x-1}{x} < 2 \Rightarrow$

$$0 < \frac{x-1+2x}{x} = \frac{3x-1}{x} \quad \text{I} \quad \frac{x}{x+0} = -\frac{1}{0+}$$

$$0 > \frac{x-1-2x}{x} = \frac{-x-1}{x} \quad \text{II} \quad \frac{x}{x+0} = -\frac{1}{0+}$$

ب) $\frac{x-2}{x+1} > 1 \Rightarrow \frac{x-2-x-1}{x+1} = \frac{-x-3}{x+1} > 0$

$$\frac{x-2}{x+1} < -1 \Rightarrow \frac{x-2+x+1}{x+1} = \frac{2x-1}{x+1} < 0$$

I $\cup$ II = $(-3, \frac{1}{2}) - \{-1\}$ $\checkmark$

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۱) $x < -4 \Rightarrow x^2 < -x-4 \Rightarrow x^2+x+4 < 0 \Rightarrow \Delta < 0$

$\Rightarrow x^2 < x+4 \Rightarrow x^2-x-4 = (x-3)(x+2) < 0$

$$\frac{-2+3}{2} = \frac{1}{2} \Rightarrow x = \frac{1}{2} \checkmark$$

$|x - \frac{1}{2}| < 2, 0$

$x \in (-2, 3)$

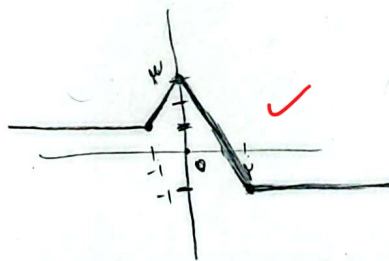
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$$\max f = 3$$

$$\min f = -1$$

$$3 + (-1) = 2 \checkmark$$



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$$y' = \left| \frac{1}{4}(x+5) \right| - 2 + 1 = \left| \frac{1}{4}x + \frac{5}{4} \right| - 1$$

$$y = \left| \frac{1}{4}x + \frac{5}{4} \right| - 1$$

$$y = \left| \frac{1}{4}x \right| - 2$$

نمودار جدید

$x \geq 0 \Rightarrow \frac{1}{4}x + \frac{5}{4} = \frac{1}{4}x$ جواب ندارد

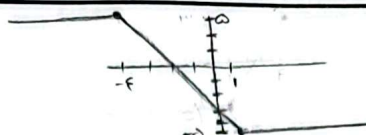
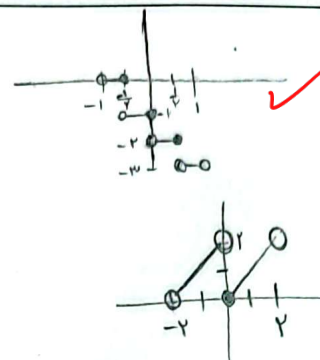
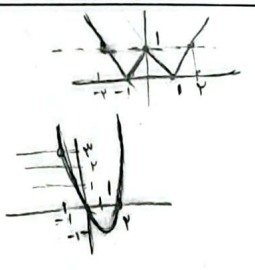
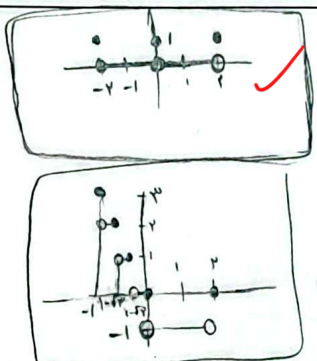
$0 \geq x \geq -5 \Rightarrow \frac{1}{4}x + \frac{5}{4} = -\frac{1}{4}x$ $x = -5 \checkmark$

$-5 \geq x \Rightarrow -\frac{1}{4}x - 2 + 1 = -\frac{1}{4}x$ جواب ندارد

$$x = -5$$

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الف) $f(x) = x-1 - x+f$  ١) $\frac{1}{x} - [1 + \frac{1}{x}] = -1 + \frac{1}{x} - [\frac{1}{x}] = -1 + \{\frac{1}{x}\}$ $-1 = -1+0 \leq -1 + \{\frac{1}{x}\} < -1+1=0$ $R_f = [-1, 0)$ ✓	$-\infty \leq f(x) \leq \infty$ $[f(x)] = \{\omega, -f, \dots, \omega\} = R_f$ ✓ $x = [x] + \{x\}$ الجزء الصحيح الجزء العشري	٢
ج) $-1 < x \leq \frac{1}{y} \Rightarrow [-yx] = 1$ $-\frac{1}{y} < x \leq 0 \Rightarrow [-yx] = 0$ $0 < x \leq \frac{1}{y} \Rightarrow [-yx] = -1$ $\frac{1}{y} < x < 1 \Rightarrow [-yx] = -y$ ١) $-y < x < 0 \Rightarrow [\frac{x}{y}] = -1$ $0 \leq x < y \Rightarrow [\frac{x}{y}] = 0$ $y = \begin{cases} x - y(-1) = x + y & -y < x < 0 \\ x & 0 \leq x < y \end{cases}$		٢
$x - 1$  $x^y - yx$ $\frac{1}{yx} = \frac{y}{y} = 1$ 		٢
$[a] + \{a\} + [b] = f, r \Rightarrow \{a\} = 0, r, [a] + [b] = f$ $[b] + \{b\} - [a] = r, f \Rightarrow \{b\} = 0, f, [b] - [a] = r$ $\Rightarrow \begin{cases} [b] = r \\ [a] = 1 \end{cases}$ $a = [a] + \{a\} = 1, r$ $b = [b] + \{b\} = r, f$ $a + b = 1, r + r, f = [f, r]$ ✓		٢
$0 < (\sqrt{x}-1)^4 < 1 \Rightarrow (\sqrt{x}+1)^4 = 198 - (\sqrt{x}-1)^4 \Rightarrow 194 < (\sqrt{x}+1)^4 < 198$ $\Rightarrow [(\sqrt{x}+1)^4] = 194$ ✓ $\sqrt{x} = 144$		٢