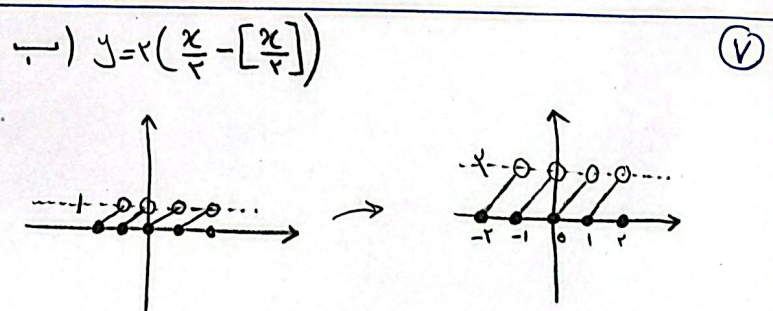
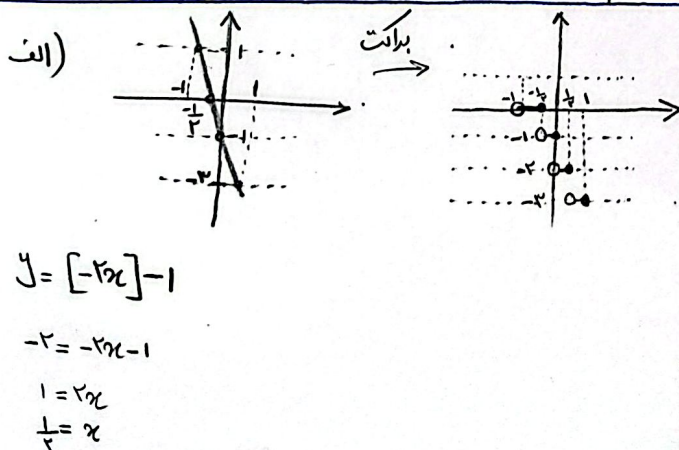
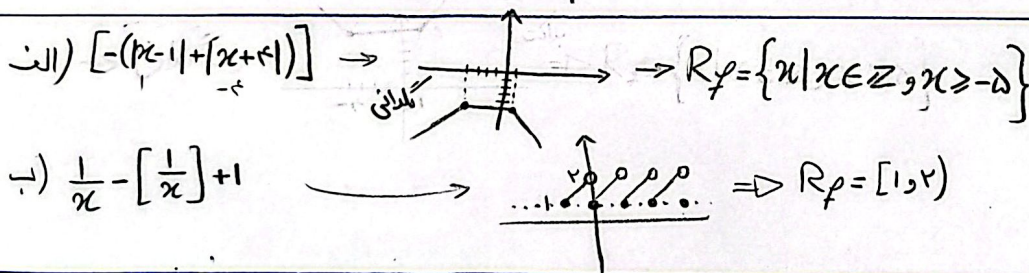
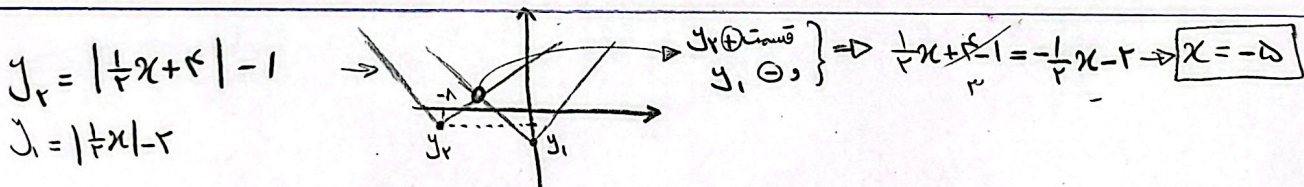
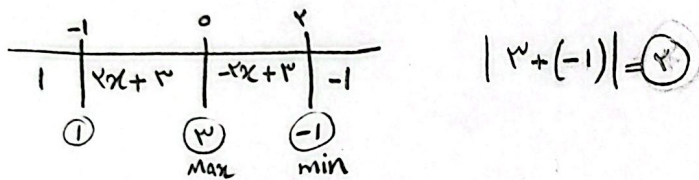


① $x \geq 1 \rightarrow \frac{1}{x-1} = x-1 \rightarrow 1 = x^2 - 2x + 1 \Rightarrow x^2 - 2x = x(x-2) = 0 \xrightarrow{x=1} 0 = x$
 $x < 1 \rightarrow \frac{1}{x-1} = 1-x \rightarrow -1 = x^2 - 2x + 1 \Rightarrow x^2 - 2x + 2 = 0 \xrightarrow{\Delta < 0} \text{ریشه ندارد}$

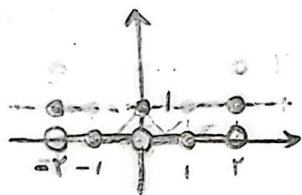
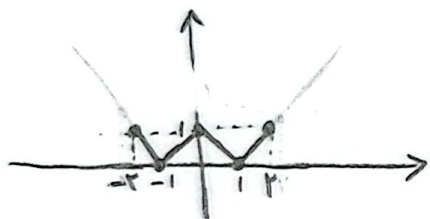
یک ریشه دارد

② الف) $\left| \frac{x-1}{x} \right| < 2 \rightarrow -2 < \frac{x-1}{x} < 2 \rightarrow -2 < 1 - \frac{1}{x} < 2 \rightarrow -3 < -\frac{1}{x} < 1 \rightarrow 0 < \frac{1}{x} < 3 \rightarrow 0 < 1 < x$
 ب) $\left| \frac{x-2}{x+1} \right| < 1 \rightarrow -1 < \frac{x-2}{x+1} < 1 \rightarrow \frac{x-2}{x+1} > -1 \rightarrow \frac{x-2}{x+1} + 1 > 0 \rightarrow \frac{x-2+x+1}{x+1} > 0 \rightarrow \frac{2x-1}{x+1} > 0 \rightarrow (-\frac{1}{2}, \frac{1}{2})$
 ج) $\left| \frac{x-2}{x+1} \right| > 1 \rightarrow \frac{x-2}{x+1} < -1 \rightarrow \frac{x-2}{x+1} + 1 < 0 \rightarrow \frac{x-2+x+1}{x+1} < 0 \rightarrow \frac{2x-1}{x+1} < 0 \rightarrow (-\frac{1}{2}, \frac{1}{2})$
 د) $x \in (-\frac{1}{2}, \frac{1}{2}) \cup \{-\frac{1}{2}\}$

③ $\alpha - \beta < x < \alpha + \beta$
 $\alpha - \beta = -2 \quad 2\alpha = 1$
 $\alpha + \beta = 3 \quad \boxed{\alpha = \frac{1}{2}}$
 $x < x + 6 \rightarrow x^2 - x - 6 < 0 \rightarrow (x-3)(x+2) \rightarrow \frac{-x}{2} \rightarrow (-\infty, -2) \cup (3, +\infty)$
 $x > -x - 6 \rightarrow x^2 + x + 6 > 0 \rightarrow \Delta < 0 \rightarrow \text{همیشه مثبت}$



الف)



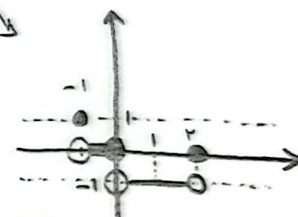
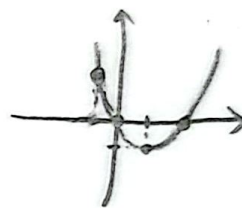
ب)

$$x^2 - 2x$$

$$x(x-2)$$

$$0 \quad 2$$

$$\frac{-b}{2a} = \frac{2}{2} = 1 \rightarrow \frac{-\Delta}{4a} = -1$$



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$$b = \dots / 4$$

$$a + [b] = 4, 2$$

$$b - [a] = 2, 4$$

درس دوازدهم

$$a + b = 4, 6$$

$$a = \dots / 2$$

0, 2	4, 4	x
1, 2	3, 4	✓
2, 2	2, 4	x
3, 2	1, 4	x
4, 2	0, 4	x

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$$[(1 + \sqrt{2})^6] = [198 - (1 - \sqrt{2})^6] = [198 - (1 - 2\sqrt{2} + 4 - 4\sqrt{2} + 4 - 2\sqrt{2})^2] = [198 - (49 + 8 - 16\sqrt{2})] = [99 + 16\sqrt{2}]$$

$$= 99 + [91, \dots] = 99 + 91 = 190$$

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