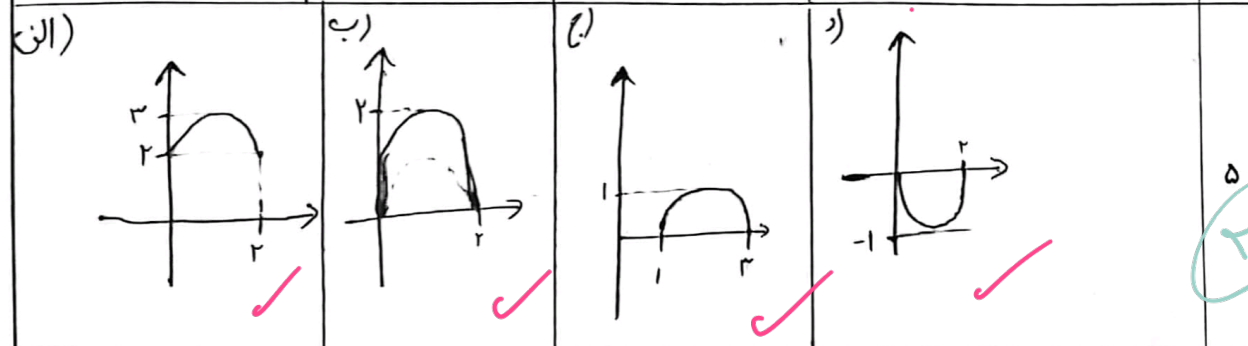
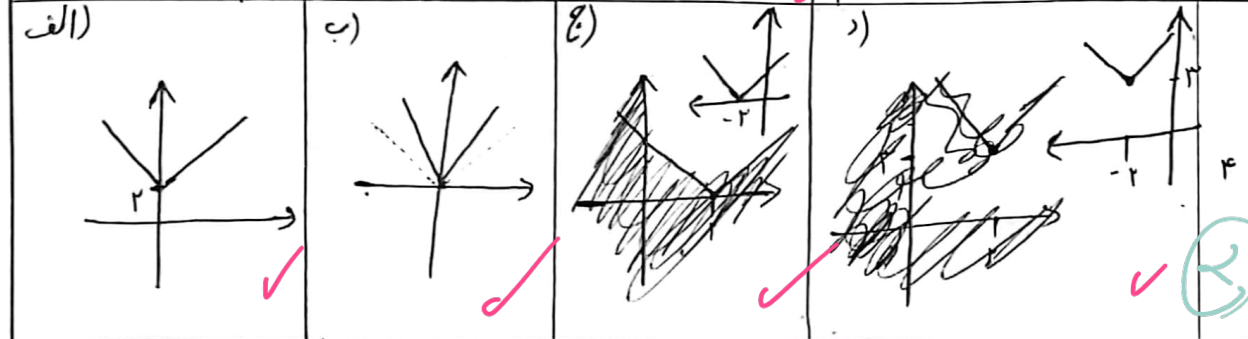


الف) $x^3 - 2x^2 = 2x^2$ $x^3 = 2x^2 + x$ $\Rightarrow \begin{cases} x^3 = 2x^2 + x \\ x^3 = 2x^2 + x \end{cases}$ $\Rightarrow x^3 = x^2 \Rightarrow x = 1$ ✓	ب) $x + x^2 = x^2 + 3$ $\Rightarrow x = -x^2 + 3$ $\Rightarrow \begin{cases} x = -x^2 + 3 \\ x = -x^2 + 3 \end{cases}$ $\Rightarrow x = -x^2 + 3$ ✓	ج) $\sqrt{x-2} + y-2 = 0$ $\Rightarrow \begin{cases} \sqrt{x-2} = 0 \\ y-2 = 0 \end{cases}$ $\Rightarrow x=2, y=2$ ✓	د) $x = \cos y$ $\text{if } x=1$ $\Rightarrow \cos y = 1$ $\Rightarrow y = 0, 2\pi, \dots$ ✓
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الف) $x^2 - 4x = 0$ $\Rightarrow x = 4$ $D_f = \mathbb{R} - \{4\}$ ✓	ب) $x^2 - 7x + 12 = 0$ $\Delta = b^2 - 4ac = 49 - 48 = 1$ $\Rightarrow x = 3, 4$ $D_f = \mathbb{R} - \{3, 4\}$ ✓	ج) مربع ریشه ندارد $D_f = \mathbb{R}$ ✓	د) $x^2 - 4x^2 = 0$ $(x^2 - 2x)(x^2 + 2x) = 0$ $(x)(x-2)(x)(x+2) = 0$ $D_f = \mathbb{R} - \{0, 2, -2\}$ ✓
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الف) $\sqrt{4-x} \geq 0$ $\sqrt{x-2} \geq 0$ $4-x \geq 0 \Rightarrow x \leq 4$ $x-2 \geq 0 \Rightarrow x \geq 2$ $\Rightarrow D_f = [2, 4]$ ✓	ب) $x^2 + 1$ $\Rightarrow x^2 \geq -1$ $D_f = \mathbb{R}$ ✓	ج) $\sqrt{x-2} \geq 0$ $x-2 \geq 0 \Rightarrow x \geq 2$ $D_f = [2, +\infty)$ ✓	د) $x + x^2$ $\Rightarrow x^2 \geq - x$ $D_f = \mathbb{R}$ ✓
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الف) $\begin{array}{r} 1^2 \quad 1^2 \quad 1^2 \\ - \frac{1}{x} + \frac{1}{x} - \frac{1}{x} \end{array}$	ب) $\begin{array}{r} 1^2 \quad 1^2 \quad 1^2 \\ + \frac{1}{x} - \frac{1}{x} - \frac{1}{x} \end{array}$	6 5
الف) $\begin{array}{r} 1^2 \quad 1^2 \quad 1^2 \\ - \frac{1}{x} + \frac{1}{x} - \frac{1}{x} \end{array}$	ب) $\begin{array}{r} 1^2 \quad 1^2 \quad 1^2 \\ - \frac{1}{x} - \frac{1}{x} - \frac{1}{x} \end{array}$	7 4
الف) $\frac{(x-1)(x^2+x+1)}{x-1} = \frac{(x-1)^2(x+1)}{x-1}$ $\begin{array}{r} -2 \quad 1^2 \quad 1^2 \\ + \frac{1}{x} - \frac{1}{x} - \frac{1}{x} \end{array}$	ب) $\frac{(x-2)(x-1)}{(x-1)(x-2)}$ $\begin{array}{r} 1^2 \quad 1^2 \quad 1^2 \\ + \frac{1}{x} + \frac{1}{x} - \frac{1}{x} \end{array}$	8 3
الف) $\frac{(x-1)(x+1)(x)^2}{(x-1)(x+1)}$ $\begin{array}{r} -2 \quad -1^2 \quad 0^2 \quad 1 \\ + \frac{1}{x} - \frac{1}{x} - \frac{1}{x} + \frac{1}{x} \end{array}$ x^2+x+1 $\Delta < 0$ $+1-1-1+$	ب) $\frac{x^2+2x+1}{x^2+2x+1}$ عبارت های صورت و مخرج ط مثنی دارند پس هیچ نام ریشه ها از $\Delta = 3^2 - 19 = -7$ $\Delta = 2^2 - 12 = -8$ $D = \mathbb{R} \leftarrow$ عددا حقیقی +	9 2
الف) $\sqrt{\frac{x^2-1}{x(x+1)(x-1)}}$ $\begin{array}{r} -1 \quad 0 \quad 1^2 \\ + \frac{1}{x} - \frac{1}{x} + \frac{1}{x} \end{array}$ $D = (-\infty, -1) \cup (1, +\infty)$	ب) $\sqrt{\frac{(x+1)(x-1)}{(x-1)(x-1)}}$ $D = (-\infty, 1) \cup (1, +\infty)$ $\begin{array}{r} -1^2 \quad 1 \quad 1^2 \\ + \frac{1}{x} - \frac{1}{x} + \frac{1}{x} \end{array}$	10 1