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$$A \times B = \{(1,2), (1,3), (2,2), (2,3), (3,2), (3,3)\}$$

$$B \times B = \{(2,2), (2,3), (3,2), (3,3)\}$$

$$(A \times B) - (B \times B) = \{(1,2), (1,3)\}$$

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الف) $m^2 = m + 2$ $m^2 - m - 2 = 0$ $(m-2)(m+1) = 0$ $m = 2$ or $m = -1$ ✓

ب) $m^2 = m - 2$ $m^2 - m + 2 = 0$ $m = 2 \rightarrow (2,2), (2,1)$ ✓
 $m = -1 \rightarrow (-1,2), (-1,3)$ ✗ $\Rightarrow$ تابع نمی شود

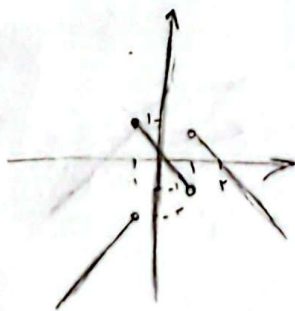
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$x=1 \Rightarrow a+b=0 \Rightarrow a=n \quad b=-n \quad ab = -n^2$ ✓

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$2k-3 = 4-3k \quad \omega k = \sqrt{k=1, 4}$ ✓

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$$D_f = \mathbb{R} - \{1\}$$

$$R_f = (-\infty, 1]$$

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الف) $y'' = -x^2 + 1$ $y_1 = x^2$ $y_2 = y_1$ ✓ تابع هست. ب) $\frac{1}{2}y'' - \frac{1}{2}y - x^2 - 2x + 1 = 0$ $x^2 - 2x + 1 \leq 0$ $x^2 - 2x + 1 < 0$ $(x-1)^2 \leq 0$ $x=1$ $\Delta = 1^2 - 4 \cdot 1 \cdot 1 = -3 < 0 \rightarrow (x-1)^2 \leq 0 \rightarrow 0 = 0 \rightarrow$ $\rightarrow$ تابع یک نقطه $(1, 1)$ ✓	6
الف) $x = 2k\pi, \pi \Rightarrow \sin y = 0$ $y = k\pi = \{0, \pi, 2\pi, \dots\} \Rightarrow$ تابع نیست. ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$ $\frac{x}{y} + \frac{y}{x} + 2 = 4$ $\frac{x^2 + y^2}{xy} = 2$ $x^2 - 2xy + y^2 = 0$ $(x-y)^2 = 0 \Rightarrow x = y \Rightarrow$ تابع است.	7
الف) $\frac{x-1}{x-2} > 0$ $\frac{1}{1-\frac{1}{x}} > 0 \Rightarrow x > 1, x \leq 1$ $\frac{x-2}{x} > 0$ $\frac{x-2}{x} < 0$ $\frac{1}{1-\frac{1}{x}} > 0 \Rightarrow 0 < x < 1 \Rightarrow D_f = (0, 1]$ ✓ ب) $\sqrt{x} < \sqrt{x+1} \Rightarrow x < x+1$ $x > 0 \Rightarrow D_f = [0, \infty)$ ✓	8
الف) $\sqrt{x^2 - 4x + 4} > 0$ $\sqrt{(x-2)^2} > 0$ $\frac{1}{1-\frac{2}{x}} > 0$ $x < 1$ $x > 2$ $\sqrt{-9x + 14} > 0$ $x < \frac{14}{9}$ $D_f = (-\infty, 1)$ ✓ ب) $\sqrt{\frac{(x-4)(x+1)}{(x-1)(x-2)}} > 0$ $\frac{1}{1-\frac{2}{x}} > 0$ $D_f = (-\infty, 1) \cup (2, 4) \cup (14, \infty)$ ✓	9
الف) $2\cos \alpha + 3 > 0$ $0 < \alpha < 2\pi$ $\frac{\alpha \pm 1}{2} = \frac{4}{2} = 2$ $\frac{1}{1-\frac{2}{x}} > 0$ $x < 1$ $x > \frac{14}{9}$ $\sqrt{x^2 - 4x + 4} > 0$ $0 < \alpha < 2\pi$ $\frac{\alpha \pm 1}{2} = \frac{4}{2} = 2$ $\frac{1}{1-\frac{2}{x}} > 0$ $x < 1$ $x > \frac{14}{9}$ $D_f = (-\infty, 1) \cup [\frac{14}{9}, \infty)$ ب) $\frac{1}{1-\frac{2}{x}} > 0$ $D_f = (-\infty, 1) \cup (1, \frac{14}{9}) \cup [\frac{14}{9}, \infty)$ ✓	10