

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

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

1

$$m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) = 0$$

$$m = 2 \text{ یا } m = -1$$

2

$$m^2 = m + 1 \rightarrow m^2 - m - 1 = 0$$

$$m = 1 \text{ یا } m = -1$$

$$a + b = 1, \quad a + b = 0, \quad a = 1, \quad b = -1$$

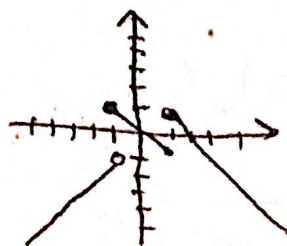
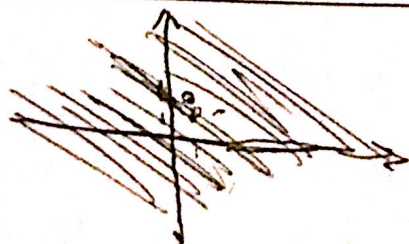
$$ab = -1$$

3

$$10x - 1 = 7 - 10x, \quad 20x = 8, \quad x = \frac{4}{5}$$

$$\begin{cases} 10x - 1 & ; x \geq \frac{4}{5} \\ 7 - 10x & ; x < \frac{4}{5} \end{cases}$$

4



$$D_f = \mathbb{R}, \quad R_f = [-1, 1]$$

5

الف) $xy'' + x'^2 + 1 = 0$ $xy' = -x^2 - 1$ $xy' = -x^2 - 1$ $y' = -y - \frac{1}{x}$
 $y_1 = y_2$

ب) ؟

الف) $x \sin y = y \sin x$

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$x \rightarrow x = 0$
 $0 \times \sin y = y \sin 0$

ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$ $\frac{x+y}{\sqrt{xy}} = 2$ $x+y = 2\sqrt{xy} \rightarrow x^2 - 2xy + y^2 = 0$

$(x-y)^2 = 0$ $x = y$ ✓

$x - \frac{1}{x} = 0$ $x \neq 0$ $\frac{x-1}{x} > 0$ $\frac{x-1}{x} < 0$ $(-\infty, 1] \cup [2, +\infty)$
 $\frac{x-1}{x} > 0$ $\frac{x-1}{x} < 0$ $(0, 1]$

$\frac{\sqrt{x^2 - 4x + 4}}{\sqrt{x^2 - 10x + 4}} \rightarrow y = \frac{\sqrt{(x-1)(x-4)}}{\sqrt{(x-1)(x-2)}}$ $(x-1)(x-4) \geq 0$
 $(-\infty, 1] \cup [4, +\infty)$

$(x-1)(x-4) \geq 0$ $\frac{x-1}{x-4} \geq 0$ $(-\infty, 1] \cup (4, +\infty)$
 $\frac{x-1}{x-4} \geq 0$ $(-\infty, 1] \cup (4, +\infty)$

$xy' - 2x + c > 0$ $\frac{xy' - 2x + c}{x} > 0$ $\frac{xy' - 2x + c}{x} > 0$ $(-\infty, \frac{c}{2}) \cup [\frac{c}{2}, +\infty)$
 $xy' - 2x + c > 0$ $\frac{xy' - 2x + c}{x} > 0$ $\frac{xy' - 2x + c}{x} > 0$ $(-\infty, \frac{c}{2}) \cup [\frac{c}{2}, +\infty)$