

$y^3 - 9x = 29x^2 \Rightarrow y^3 = 29x^2 + 9x$
 $y_1^3 = 29x_1^2 + 9x_1$
 $y_2^3 = 29x_2^2 + 9x_2$
 $y_1^3 = y_2^3 \Rightarrow y_1 = y_2$
 $|y| + 9x^2 = 9x + 3 \Rightarrow |y| = 9x + 3 - 9x^2$
 $|y| = 3 \Rightarrow y = \pm 3$

$\sqrt{9x-4} + |y-2| = 0 \Rightarrow \sqrt{9x-4} = 0 \Rightarrow 9x-4=0 \Rightarrow x=4/9$
 $|y-2|=0 \Rightarrow y=2$
 $x = \cos y$
 $y = \frac{\pi}{2} + k2\pi$

$x = \frac{x+4}{x^2-4x} \Rightarrow x(x-4) \neq 0 \Rightarrow x \neq 4, x \neq 0$
 $D_f = \mathbb{R} - \{0, 4\}$

$x = \frac{9x+4}{x^2-7x+14} \Rightarrow \Delta = b^2 - 4ac \Rightarrow \Delta = 49 - 4(14) = -15$
 $D_f = \mathbb{R}$

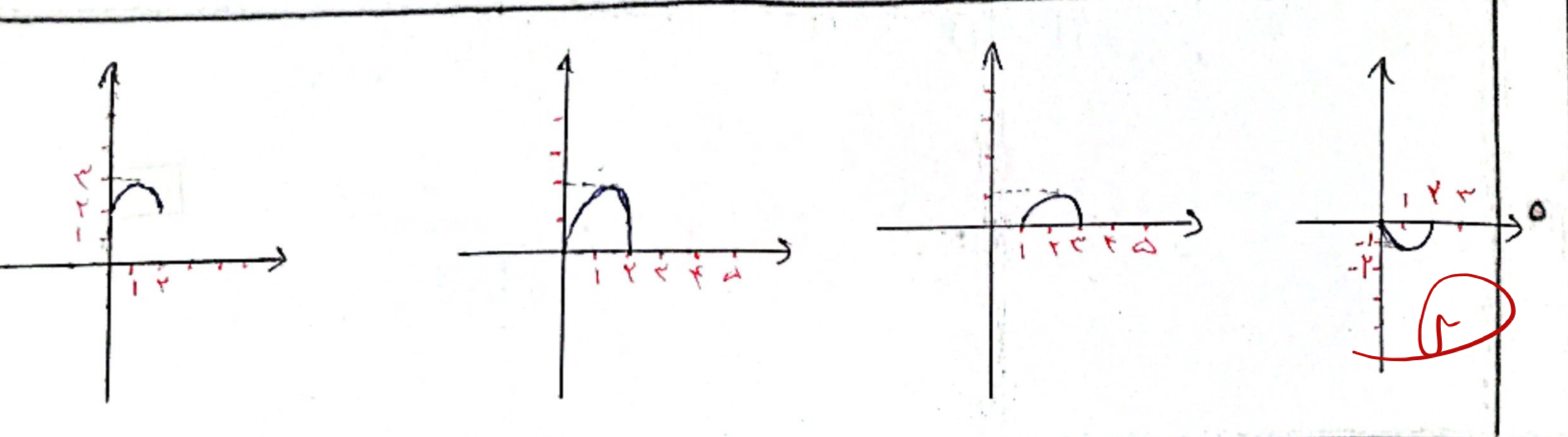
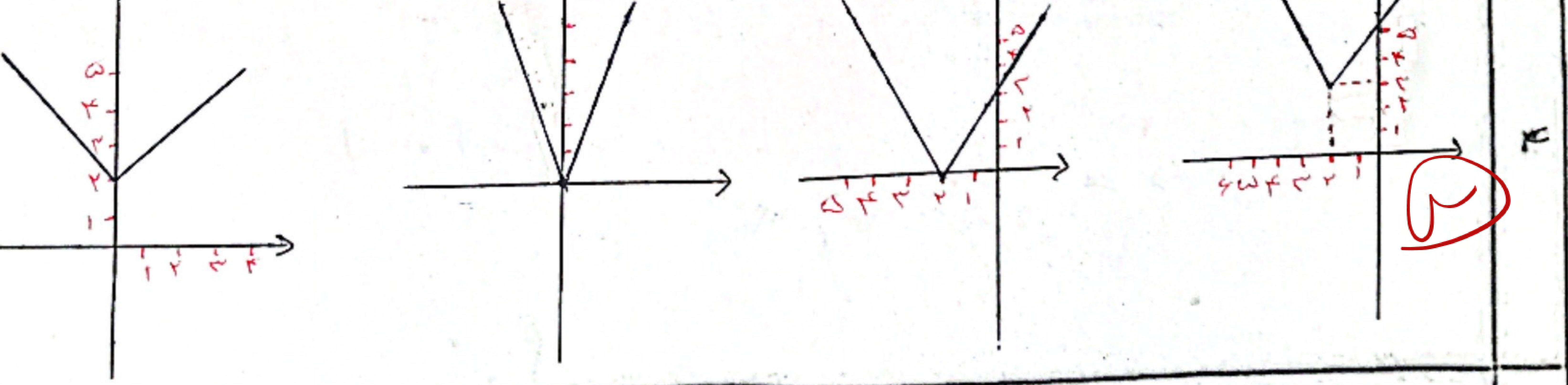
$x = \frac{9x+4}{x^2+9x+4} \Rightarrow \Delta = 1 - 16 = -15$
 $D_f = \mathbb{R}$

$y = \sqrt{4-9x} + \sqrt{9x-2} \Rightarrow 4-9x \geq 0 \Rightarrow x \leq 4/9$
 $9x-2 \geq 0 \Rightarrow x \geq 2/9$
 $x = [2/9, 4/9]$

$y = \frac{9x+1}{x^2+1} \Rightarrow x^2+1=0$
 $D_f = \mathbb{R}$

$y = \frac{\sqrt{9x-2}}{9x-4} \Rightarrow 9x-2 \geq 0 \Rightarrow x \geq 2/9$
 $9x-4 \neq 0 \Rightarrow x \neq 4/9$
 $D_f = [2/9, +\infty) - \{4/9\}$

$x = \frac{29x+3}{|9x|+9x^2} \Rightarrow |9x|+9x^2 \neq 0$
 $D_f = \mathbb{R} - \{0\}$



$$y = (x-2)(x-3)(x-4) \xrightarrow{\text{ریشه ها (2, 3, 4)}} \begin{array}{c|ccc} x & 2 & 3 & 4 \\ \hline & - & + & - & + \end{array}$$

$$D_f = [2, 3] \cup [4, +\infty)$$

$$y = (x-2)(x-3)^2(x-4) \xrightarrow{\text{ریشه ها (2, 3, 4)}} \begin{array}{c|ccc} x & 2 & 3 & 4 \\ \hline & + & - & - & + \end{array}$$

$$D_f = (-\infty, 2] \cup \{3\} \cup [4, +\infty)$$

$$y = \frac{(x-2)(x-4)}{x-3} \xrightarrow{\text{ریشه ها (2, 3, 4)}} \begin{array}{c|ccc} x & 2 & 3 & 4 \\ \hline & - & + & - & + \end{array}$$

$$D_f = [2, 3) \cup [4, +\infty)$$

$$y = \frac{(x-2)(x-4)}{(x-3)^2} \xrightarrow{\text{ریشه ها (2, 3, 4)}} \begin{array}{c|ccc} x & 2 & 3 & 4 \\ \hline & + & - & - & + \end{array}$$

$$D_f = (-\infty, 2] \cup [4, +\infty)$$

$$y = \frac{x^3 - 2x + 2}{x-3} \xrightarrow{\text{جمع ضرایب برابر است}} \begin{array}{c|ccc} x & 2 & 3 & 4 \\ \hline & - & + & - & + \end{array}$$

$$y = \frac{x^3 - 2x + 2}{x-3} = \frac{(x-1)(x-1)(x+2)}{x-3}$$

$$D_f = (-\infty, 2] \cup \{1\} \cup [3, +\infty)$$

$$y = \frac{x^2 - 4x + 2}{x^2 - 4x + 3} = \frac{(x-1)(x-2)}{(x-1)(x-3)} \xrightarrow{\text{ریشه ها (1, 2, 3)}} \begin{array}{c|ccc} x & 1 & 2 & 3 \\ \hline & + & - & - & + \end{array}$$

$$D_f = (-\infty, 1) \cup (1, 2] \cup [3, +\infty)$$

$$y = \frac{x^2 - x}{x^2 + x + 2} = \frac{x^2(x-1)}{x^2 + x + 2} = \frac{x^2(x-1)(x+1)}{x^2 + x + 2}$$

$$D_f = (-\infty, -1] \cup \{0\} \cup [1, +\infty)$$

$$y = \frac{x^2 + 9x + 4}{x^2 + 2x + 3} \rightarrow \Delta = 9 - 12 = -3$$

$$y = \frac{x^2 + 9x + 4}{x^2 + 2x + 3} \rightarrow \Delta = 4 - 9 = -5$$

$$D_f = \mathbb{R}$$

$$y = \sqrt{\frac{x^2 - 1}{x^2 - x}} = \sqrt{\frac{x^2 - 1}{x(x-1)(x+1)}} \xrightarrow{\text{ریشه ها (0, 1, -1)}} \begin{array}{c|ccc} x & -1 & 0 & 1 \\ \hline & + & - & - & + \end{array}$$

$$D_f = (-\infty, -1) \cup (0, 1) \cup [1, +\infty)$$

$$y = \sqrt{\frac{x^2 - 16}{x^2 - 2x + 4}} = \sqrt{\frac{(x+4)(x-4)}{(x-1)(x-4)}} \xrightarrow{\text{ریشه ها (-4, 4, 1)}} \begin{array}{c|ccc} x & -4 & 1 & 4 \\ \hline & + & - & - & + \end{array}$$

$$D_f = (-\infty, -4] \cup (1, 4) \cup [4, +\infty)$$