

## ۲. آزمون مابقی نویسی

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p> <math>\rightarrow f(x) = \sqrt{(a-1)x^2 + ax + b}</math> <math>\rightarrow [1, +\infty)</math> تعریف می شود!<br/> <math>\rightarrow (a-1)x^2 + ax + b</math> <math>\rightarrow</math> یک درجه ۲ دارد!<br/> <math>\rightarrow (a-1) = 0 \rightarrow a = 1</math><br/> <math>\rightarrow 1x + b</math> <math>\xrightarrow{x=1}</math> <math>1(1) + b = 0</math><br/> <math>\rightarrow 1 + b = 0 \rightarrow b = -1</math> <span style="border: 1px solid black; padding: 2px;">b = -1</span> </p> | <p style="text-align: center;">۱</p>                                                                                                                                                                                                                                                                                                                                                    |
| <p> <math>\rightarrow f(x) = \sqrt{x^2 + 1x + 1 - m^2}</math><br/> <math>\rightarrow b^2 - 4ac \leq 0 \rightarrow 1^2 - 4 \times 1 \times (1 - m^2) \leq 0</math><br/> <math>\rightarrow 1 - 4(1 - m^2) \leq 0 \rightarrow 1 - 4 + 4m^2 \leq 0 \rightarrow 4m^2 - 3 \leq 0</math><br/> <math>\rightarrow m^2 - 1 \leq 0 \rightarrow m^2 \leq 1 \rightarrow -1 \leq m \leq 1</math> <math>\begin{cases} m = -1 \\ m = 1 \end{cases}</math> <math>\rightarrow 1 - (-1) = 1 + 1 = 2</math> </p>         | <p style="text-align: center;">۲</p>                                                                                                                                                                                                                                                                                                                                                    |
| <p> <math>\rightarrow f(x) = \frac{\sqrt{4-x^2}}{[x] + [-x] + 1}</math> <math>\rightarrow 4 - x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow -2 \leq x \leq 2</math><br/> <math>\rightarrow [x] + [-x] + 1 \neq 0 \rightarrow [x] + [-x] \neq -1 \rightarrow x \in \mathbb{Z}</math><br/> <math>\rightarrow Df = \{-2, -1, 0, 1, 2\}</math> </p>                                                                                                                                                      | <p style="text-align: center;">۳</p>                                                                                                                                                                                                                                                                                                                                                    |
| <p> <b>ب)</b> <math>y = \sqrt{\frac{(x^2-1)(x^3-1)x^2}{x^2-1}}</math><br/> <math>\rightarrow \frac{(x^2-1)(x^3-1)x^2}{x^2-1} \geq 0 \rightarrow \frac{(x-1)(x+1)x^2(x-1^3)}{(x-1)(x^2+x+1)} \geq 0</math><br/> <math>\rightarrow \frac{-1 \quad + \quad 1^3 \quad 1^2}{+ \quad - \quad - \quad - \quad +}</math><br/> <span style="border: 1px solid black; padding: 2px;">Df = <math>(-\infty, -1] \cup \{-1\} \cup [1, +\infty)</math></span> </p>                                                 | <p> <b>الف)</b> <math>y = \sqrt{x^3 + 1^3 x^2}</math><br/> <math>\rightarrow x^3 + 1^3 x^2 \geq 0 \rightarrow x^2(x + 1^3) \geq 0</math><br/> <math>\rightarrow \frac{-1^3 \quad +}{- \quad + \quad +}</math><br/> <span style="border: 1px solid black; padding: 2px;">Df = <math>[-1, +\infty)</math></span> </p>                                                                     |
| <p> <b>ب)</b> <math>y = \sqrt{4 -  2-x }</math><br/> <math>\rightarrow 4 -  2-x  \geq 0 \rightarrow  2-x  \leq 4</math><br/> <math>\rightarrow -4 \leq 2-x \leq 4 \rightarrow -4 \leq -x \leq 2</math><br/> <math>\rightarrow 4 \geq x \geq -2 \rightarrow -2 \leq x \leq 4</math><br/> <span style="border: 1px solid black; padding: 2px;">Df = <math>[-2, 4]</math></span> </p>                                                                                                                   | <p> <b>الف)</b> <math>y = \sqrt{ x-1  - 1^3}</math><br/> <math>\rightarrow  x-1  - 1^3 \geq 0 \rightarrow  x-1  \geq 1^3</math><br/> <math>\rightarrow x-1 \geq 1^3 \rightarrow x \geq 2</math><br/> <math>\rightarrow x-1 \leq -1^3 \rightarrow x \leq 0</math><br/> <span style="border: 1px solid black; padding: 2px;">Df = <math>(-\infty, 0] \cup [2, +\infty)</math></span> </p> |

