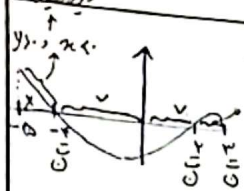


۱.  $y = \sqrt{x^3 \lambda f(x+1)} \leadsto \sqrt{x^3 x \left( \left( \frac{1}{x} \right)^{x-2+1} - 1 \right)} \leadsto$  به ازای ۲ ستاره ۵ در عبارت زیر رادیکال صدای منفرد است  
 $\leadsto \frac{+}{-} \mid \frac{+}{-} \mid \frac{+}{-} \leadsto D = (-\infty, 0] \cup [1, +\infty)$

۲.  $f(-x) = \sqrt{-x+|2-x|} \rightarrow -x+|2-x| \geq 0 \rightarrow x \geq 2 \rightarrow -x+2-x \geq 0 \times$   
در این مرحله نادیده  
 $\rightarrow x < 2 \rightarrow -x+2-x \geq 0 \rightarrow 2 \geq 2x-x \rightarrow x \leq 2$

۳. در اینجا می بینیم که  $f(x) \neq 0$  و  $x = -2, 2, 3$  جزء بازه های جواب نیستند  
  
 $\rightarrow (-2, 0] \cup (0, 2) \cup (2, 3)$

۴.  $\frac{1}{4x^4 - 5x^2 - 2x - 1} = \frac{1}{(x^2 + x + 2x^2)(1 + x + 2x^2)} = \frac{1}{3x^2 + ax + b}$   
 $\leadsto a = b = 1 \rightarrow \sqrt{-1}$  غرض  
 $\leadsto a = 1, b = -1 \rightarrow \sqrt{1}$

۵.  $y = \sqrt{\frac{f(x)}{x^2 + 2}} = \sqrt{\frac{x^4 + x - \left(\frac{x}{x}\right)^2 - \frac{x}{x}}{x^2 + 2}} = \sqrt{\left(x^2 - \frac{1}{x^2}\right) + \left(x - \frac{1}{x}\right)}$   
 $\leadsto \sqrt{\left(x - \frac{1}{x}\right)\left(x^2 + x + \frac{1}{x^2}\right) + \left(x - \frac{1}{x}\right)} \xrightarrow{\text{تجزیه}} \sqrt{\left(x - \frac{1}{x}\right)\left(x^2 + x + \frac{1}{x^2} + 1\right)}$   
 $= \sqrt{\frac{x^2 - 1}{x} \times \frac{x^4 + x^3 + x^2 + 1}{x^2}} = \sqrt{\frac{(x^2 - 1)(x^4 + x^3 + x^2 + 1)}{x^3}} \rightarrow \frac{-1}{+} \mid \frac{+}{-} \mid \frac{+}{-}$   
 $\leadsto D = [-2, 0) \cup [2, +\infty)$

|                                                                                                                                                                                                                                                                                                                                                                                                               |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| $b(r) + b(1)$ $\begin{cases} \lambda^r + n = 1 \rightarrow n = r \\ \lambda^r + n = r \rightarrow \lambda = 1 \end{cases}$ $b(r) = r(1)^r - 1 = 1$ $b(1) = r(r)^r - 1 = r \rightarrow b(r) + b(1) = r$                                                                                                                                                                                                        | 6  |
| $g(\sqrt{v} - r) = (\sqrt{v} - r)^r + 9(\sqrt{v} - r)^r + 14(\sqrt{v} - r)^r =$ $v - 9\sqrt{v} + 14\sqrt{v} - 14 + 9\sqrt{v} + 14 - 0\sqrt{v} + 14\sqrt{v} - 14 = -r$ $\widetilde{b(\sqrt{r} + r)} = (\sqrt{r} + r)^r - 9(\sqrt{r} + r)^r + 14(\sqrt{r} + r)^r =$ $r + 9\sqrt{r} + 14\sqrt{r} + 14 - 9\sqrt{r} - 14 - 14\sqrt{r} + 14\sqrt{r} + 14 = 1$ $\sim \frac{-r}{r} = -1$                              | 7  |
| $b(x) = \sqrt{x - \frac{r}{2} + \frac{r}{2}\sqrt{x - \frac{r}{2}}} = (\sqrt{x - \frac{r}{2}} + r)^r$ $g(x) = \sqrt{x - \frac{r}{2} + \frac{r}{2}\sqrt{x - \frac{r}{2}}} = (\sqrt{x - \frac{r}{2}} - r)^r$ $b(x) + g(x) = (\sqrt{x - \frac{r}{2}} + r)^r + (\sqrt{x - \frac{r}{2}} - r)^r = 2\sqrt{x - \frac{r}{2}} = a + b\sqrt{x} + c$ $\sim a + b = r$                                                      | 8  |
| $b(r) = \frac{r}{-1} = -r$ $b(1) = \frac{r}{r}$ $\sim \frac{g}{b} \sim \frac{1}{-r}, \frac{r}{r} = 1$                                                                                                                                                                                                                                                                                                         | 9  |
| <p>ب) <math>b(r, n) = \left\{ \left( \frac{1}{r}, r \right), \left( \frac{r}{r}, -1 \right), \left( \frac{r}{r}, r \right), \left( -\frac{1}{r}, r \right) \right\} \rightarrow</math></p> <p>ج) <math>b(r, n) \left\{ (1, r), (\sqrt{r}, -1), (r, r) \right\}</math></p> <p>د) <math>\left\{ (-1, 14), (1, 4), (3, 9), (-1, 1) \right\}</math></p> <p>هـ) <math>\left\{ (3, -1), (1, -4) \right\}</math></p> | 10 |