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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>الف) <math>x^2 - 1 \geq 0 \rightarrow (x-1)(x+1) \geq 0 \rightarrow \frac{-1}{-1} \frac{+1}{+1} \textcircled{I}</math><br/> <math>(-\infty, -1] \cup [1, +\infty)</math></p> <p><math>x - 2 \geq 0 \rightarrow x \geq 2 \textcircled{II}</math> <math>D_f = I \cap II \Rightarrow [2, +\infty)</math></p>                                                                                                                                             | <p>6</p>                                                                                                                                                                                                                                                            |
| <p>ب) <math>4 - 2x \geq 0 \rightarrow x \leq 2 \textcircled{I}</math> <math>\textcircled{I} \cap \textcircled{II} \Rightarrow D_f = (\frac{1}{2}, 2]</math></p> <p><math>4x - 2 &gt; 0 \rightarrow 4x &gt; 2 \rightarrow x &gt; \frac{1}{2} \textcircled{II}</math></p>                                                                                                                                                                                  | <p>7</p>                                                                                                                                                                                                                                                            |
| <p><math>4x - a \geq 0 \rightarrow 4x \geq a \rightarrow x \geq \frac{a}{4}</math></p> <p><math>b - 2x \geq 0 \rightarrow x \leq \frac{b}{2}</math> <math>[\frac{a}{4}, \frac{b}{2}] \neq \emptyset \rightarrow \frac{20}{100} \rightarrow \frac{2}{10}</math></p> <p><math>\frac{a}{4} = 2 \rightarrow a = 8</math> <math>\frac{b}{2} = 2 \rightarrow b = 4</math> <math>\frac{b}{a} = \frac{4}{8} = \frac{1}{2}</math></p>                             | <p>8</p>                                                                                                                                                                                                                                                            |
| <p>الف) <math>x^2 - x - 6 = (x-3)(x+2) \rightarrow (-2) \textcircled{I} \text{ و } (3) \textcircled{II}</math> <math>D_f = (-\infty, -2) \cup (3, +\infty)</math></p> <p>ب) <math>x^4 - 13x^2 + 4 = (x^2-4)(x^2-9) \rightarrow \pm 2 \text{ و } \pm 3</math> <math>D_f = (-\infty, -3) \cup (-2, 2) \cup (3, +\infty)</math></p> <p>ج) <math>(x+1)(x^2+x-6) = (x+1)(x+3)(x-2)</math> <math>D_f = (-\infty, -1) \cup (-3, 2) \cup (2, +\infty)</math></p> | <p>9</p>                                                                                                                                                                                                                                                            |
| <p>الف) <math>[x] - 4 \geq -2 \rightarrow [x] \geq 2</math></p> <p><math>[2, +\infty) \rightarrow D_f</math></p> <p>دقت کن!</p>                                                                                                                                                                                                                                                                                                                          | <p>ب) <math>2[x] - 5 &gt; 0</math></p> <p><math>2[x] &gt; 5 \rightarrow [x] &gt; \frac{5}{2}</math></p> <p><math>[x] &gt; 3 \rightarrow D_f = [4, +\infty)</math></p>                                                                                               |
| <p>الف) <math>\frac{x+1}{x-1} \geq 0 \rightarrow x &gt; 1</math> <math>x \neq 1 \textcircled{I}</math></p> <p><math>x^2 + 2x + 3 &lt; 0 \rightarrow \Delta &lt; 0 \rightarrow \frac{-2 \pm \sqrt{4-12}}{2} = \frac{-2 \pm 2i}{2} = -1 \pm i</math></p> <p><math>4 - x \geq 0 \rightarrow x \leq 4 \textcircled{II}</math></p> <p><math>\textcircled{I} \cap \textcircled{II} \rightarrow D_f = [-1, 4)</math></p>                                        | <p>ب) <math>[x] - 4 \geq 0 \rightarrow [x] \geq 4 \textcircled{I}</math></p> <p><math>2 - [x] \geq 0 \rightarrow [x] \leq 2 \textcircled{II}</math></p> <p><math>\textcircled{I} \cap \textcircled{II} \rightarrow \emptyset \rightarrow D_f = \emptyset</math></p> |

الف)  $y = \sqrt{2[x] - 4} \leadsto 2[x] - 4 \geq 0 \rightarrow [x] \geq \frac{4}{2} \leadsto x \geq 2 \rightarrow D_f = [2, +\infty)$

ب)  $y = \sqrt{\frac{x^3 - 2x^2 - 5x + 4}{x^3 + 2x^2 - 5x - 4}} \leadsto \frac{x^3 - 2x^2 - 5x + 4}{x^3 + 2x^2 - 5x - 4} \geq 0 \leadsto$

مخرج را به صفر نقش پذیر بر (n-1)  
مخرج را به صفر نشان زوج و فرد برابر نقش پذیر بر (n+1)

$$\frac{(n-1)(n^2 - n - 4)}{(n+1)(n^2 + n - 4)} \geq 0 \leadsto \frac{(n-1)(n-3)(n+2)}{(n+1)(n+3)(n-2)} \geq 0 \leadsto$$

$\begin{array}{ccccccc} -3 & -2 & -1 & | & 2 & 3 \\ + & - & + & - & + & - & + \end{array}$

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