

$$g(x) = (a-r)x^r + ax + b \quad g(r) = 0$$

$$(a-r)(r)^r + a(r) + b = 0 \quad 9a - 11 + 12a + b = 0 \quad 11a + b - 11 = 0$$

$$b = 11 - 11a \quad \leftarrow \text{مساوي}$$

$$1 - m^r \geq 0 \quad m^r \leq 1 \quad \rightarrow -1 \leq m \leq 1 \quad \rightarrow m_{\max} = 1, m_{\min} = -1$$

$$\frac{\sqrt{f-x^2}}{[x]+[-x]+1} = \frac{f-x^2 \geq 0 \Rightarrow x = \pm r}{R} \Rightarrow R \cap [-r, r] \Rightarrow [-r, r] = D$$

عدد صحیح در این وجود دارد!

جواب

الف)  $x^2 + 3x^2 \geq 0$      $x^2(x+3) \geq 0$      $x+3 \geq 0$      $x \geq -3$

$D = [-3, +\infty)$  |  $\frac{(x-1)(x+1)x^2(x-3)}{(x-1)(x^2+x+1)} = \frac{x^2(x+1)(x-3)}{x^2+x+1}$

ب)  $x^2 - 1 \rightarrow (x-1)(x+1)$      $x^2 + x + 1 > 0$      $(x+1)(x-3) \geq 0$

$x^2 - 3x^2 \rightarrow x^2(x-3)$      $x \leq -1$      $x \geq 3$      $D = (-\infty, -1] \cup [3, +\infty)$

$x^2 - 1 = (x-1)(x^2+x+1)$

الف)  $|x-2|-3 \geq 0$      $|x-2| \geq 3$      $x-2 \geq 3$      $x-2 \leq -3$   
 $D = (-\infty, -1] \cup [5, +\infty)$  ← جواب

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ب)  $4-|2-x| \geq 0$      $|2-x| \leq 4$      $-4 \leq 2-x \leq 4$      $-2 \leq x \leq 4$   
 $D = [-2, 4]$  ← جواب

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| <p>الف) <math>1 - x x  \geq 0</math> <math>\Rightarrow D = (-\infty, 1]</math> ← جواب</p> <hr/> <p>ب) <math>3 -  x-5  - 1 &gt; 0 \rightarrow 2 -  x-5  &gt; 0</math></p> <p><math>D = [2, 3) \cup (3, 7) \cup (7, 8]</math> ← جواب</p>                                                                                                                                                                                                                                                                             | ٦  |
| <p>الف) <math>\sin^2 x - 1 = -\cos^2 x \quad y = \frac{-\cos^2 x}{\cos x} \quad \cos \neq 0 \quad x \neq \frac{\pi}{2} + K\pi</math></p> <p><math>D = \mathbb{R} - \{\frac{\pi}{2} + K\pi \mid K \in \mathbb{Z}\}</math> ← جواب</p> <hr/> <p>ب) <math>2\cos x - 1 \neq 0 \quad \cos x \neq \frac{1}{2} \quad \cos x = \frac{1}{2}</math></p> <p><math>D = \mathbb{R} - \{2K\pi \pm \frac{\pi}{3} \mid K \in \mathbb{Z}\}</math> ← جواب</p>                                                                         | ٧  |
| <p>الف) <math> 2x+1  -  x+3  \neq 0 \rightarrow  2x+1  \neq  x+3  \quad 2x+1 = -(x+3)</math></p> <p><math>2x+1 = x+3 \rightarrow x=2 \quad 2x+1 = x+3 \rightarrow \boxed{x=2} \quad 2x = -5 \quad x = -\frac{5}{2}</math></p> <p><math>D = \mathbb{R} - \{-\frac{5}{2}, 2\}</math> ← جواب</p> <hr/> <p>ب) <math> 2x+1  \geq  x+3  \quad (2x+1)^2 \geq (x+3)^2 \rightarrow (x-2)(5x+4) \geq 0</math></p> <p><math>x=2, \quad x = -\frac{4}{5} \quad D = (-\infty, -\frac{4}{5}] \cup [2, +\infty)</math> ← جواب</p> | ٨  |
| <p><math>\log \frac{1}{x} (\log_2 (2x-1)) \geq 0 \quad 0 &lt; \log_2 (2x-1) \leq 1</math></p> <p><math>0 &lt; \log_2 (2x-1) \leq 1 \quad 0 &lt; \log_2 (2x-1) \Rightarrow 2x-1 &gt; 1 \rightarrow x &gt; 1</math></p> <p><math>\log_2 (2x-1) \leq 1 \rightarrow 2x-1 \leq 2 \rightarrow x \leq \frac{3}{2}</math></p> <p><math>D = (1, \frac{3}{2}]</math> ← جواب</p>                                                                                                                                              | ٩  |
| <p>الف) <math>2\cos x + 1 &gt; 0 \quad \cos x &gt; -\frac{1}{2} \quad x \in (-\frac{2\pi}{3} + 2K\pi, \frac{2\pi}{3} + 2K\pi)</math></p> <p>← جواب <math>D_1</math></p> <hr/> <p>ب) <math>\frac{x-1}{x+1} \geq 1 \quad \frac{x-1}{x+1} - 1 \geq 0 \quad \frac{x-1-x-1}{x+1} \geq 0</math></p> <p><math>\frac{-2}{x+1} \geq 0 \quad x+1 &lt; 0 \quad x &lt; -1 \rightarrow D = (-\infty, -1)</math></p>                                                                                                             | ١٠ |