

نام و نام خانوادگی نامی پاسخنامه تشریحی تکلیف شماره ۲ کلاس B

۱۹,۷۵ افزون خوب نوشتی

$$f(x) = \sqrt{(a-2)x^2 + ax + b} \rightarrow D_f = \left[\frac{3}{2}, +\infty \right) \rightarrow (a-2)x^2 + ax + b \geq 0$$

$a-2, \dots$
 $a, \textcircled{P}$

$$x \geq b \Rightarrow x \geq -\frac{b}{\frac{3}{2}}$$

$-\frac{b}{\frac{3}{2}}, \textcircled{P}$
 $\Rightarrow b, \textcircled{P}$

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$$x^2 + 2x + (1-m^2) \geq 0 \quad \text{و } x \in \left[-\frac{1}{2}, -1 \right] \quad f_{\min} = 1-m^2$$

$$\Delta = 4 - 4(1)(1-m^2) \leq 0 \quad 1-m^2 \geq 0 \rightarrow m^2 \leq 1 \rightarrow -1 \leq m \leq 1$$

$-1 \leq m \leq 1 \rightarrow \text{max}, 1$
 $\text{min}, -1$
 $1 - (-1), \textcircled{P}$

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$$\varepsilon - x^2 \geq 0 \rightarrow -2 \leq x \leq 2$$

$[x] + [-x]$
 $x \notin \mathbb{Z} \rightarrow 0$
 $x \in \mathbb{Z} \rightarrow 1$

$x \in \mathbb{Z}, \textcircled{P}$
 $[-2, 2]$
 $\{-2, -1, 0, 1, 2\} \textcircled{P}$

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$$\sqrt{x^2 + cx} \rightarrow \sqrt{x^2(x+c)} \quad x \neq 1$$

$$D = [-1, +\infty) \textcircled{P}$$

$$\sqrt{\frac{x^2(x+1)(x-1)}{x^2 + x + 1}} \quad (x+1)(x-1) \geq 0$$

$$\sqrt{\frac{(x^2-1)(x^2-cx)}{x^2-1}} \rightarrow \sqrt{\frac{(x-1)(x+1) \cdot x^2(x-c)}{(x-1)(x^2+x+1)}}$$

$x \leq -1 \quad x \geq 3$
 $x, 0 \checkmark$
 $D = (-\infty, -1] \cup [3, +\infty) \textcircled{P}$

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$$\sqrt{|x-2|-3}$$

$$x-2 \geq 3 \rightarrow x \geq 5$$

$$x-2 \leq -3 \rightarrow x \leq -1$$

$D = (-\infty, -1] \cup [5, +\infty) \textcircled{P}$

$$\sqrt{\varepsilon - |2-x|} \rightarrow \varepsilon - |2-x| \geq 0$$

$$|2-x| \leq \varepsilon \rightarrow -\varepsilon \leq 2-x \leq \varepsilon \rightarrow -2 \leq x \leq 4$$

$[-2, 4] \textcircled{P}$

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الف) $\sqrt{1-x x }$ if $x > 0 \rightarrow x^2 \leq 1 \rightarrow 0 \leq x \leq 1$ if $x < 0 \rightarrow -x^2 \leq 1 \rightarrow x^2 \geq -1 \rightarrow$ always true	$D = [1, 2) \cup (2, 8]$ $D = (-\infty, 1]$ $x-2 \neq 2 \rightarrow x \neq 4$ $x-2 \neq -2 \rightarrow x \neq 0$ $\sqrt{3- x-2 } - 1 \neq 0$ $(\sqrt{3- x-2 })^2 + 1$ $3- x-2 \neq 1 \rightarrow x-2 \neq 2$ $-3 \leq x-2 \leq 3$ $x \in [1, 8]$
الف) $y = \frac{\sin^2 x - 1}{\cos x}$ $\cos x \neq 0$ $x \neq k\pi \pm \frac{\pi}{2} \quad (k \in \mathbb{Z})$ $D = \mathbb{R} - \{k\pi \pm \frac{\pi}{2}\}$	$\cos x = 1 \neq 0$ $\cos x \neq \frac{1}{2}$ $D = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$
الف) $\frac{x+3}{ x+1 - x+2 }$ $x+1 - x+2 \neq 0$ $x+1 \neq x+2$ $x+1 = x+2 \rightarrow x = -\frac{3}{2}$ $x+1 = -(x+2) \rightarrow x = -\frac{5}{2}$ $D = \mathbb{R} - \{-\frac{3}{2}, -\frac{5}{2}\}$	$x+1 = x+2 \rightarrow x = -\frac{3}{2}$ $x+1 = -(x+2) \rightarrow x = -\frac{5}{2}$ $D = (-\infty, -\frac{5}{2}] \cup [-\frac{3}{2}, +\infty)$ $x = -\frac{5}{2}, -\frac{3}{2}$ $x+1 - x+2 \geq 0 \rightarrow x^2 + 4x + 9 \geq 0$ $x+1 - x+2 \geq 0 \rightarrow (x+1)^2 \geq (x+2)^2$ $(x^2 + 2x + 1) \geq (x^2 + 4x + 4)$ $(x^2 + 2x + 1) - (x^2 + 4x + 4) \geq 0$ $-2x - 3 \geq 0$ $-2x \geq 3$ $x \leq -\frac{3}{2}$
$x-1 > 0 \rightarrow x > 1 \rightarrow x > \frac{1}{2}$ $\log_2(x-1) > 0 \rightarrow x-1 > 0 \rightarrow x-1 > 1 \rightarrow x > 2 \rightarrow x > 1$ $\log_2(x-1) \leq (0, 0)$ $\log_2(x-1) \leq 1$ $x-1 \leq 0 \rightarrow x-1 \leq 2 \rightarrow x \leq 3$	$D = [1, 3]$
الف) $y = \log_2(x+1)$ $\log_2(x+1) > 0 \rightarrow x+1 > 1 \rightarrow x > 0$ $\log_2(x+1) \leq 1 \rightarrow x+1 \leq 2 \rightarrow x \leq 1$ $D = (0, 1]$	$(-\frac{2}{e}, \frac{2}{e})$ $(x-1) - (x+1) \geq 0$ $-2 \geq 0$ $D = [1, \frac{2}{e}) \cup (\frac{2}{e}, 2]$ $\log_2(\frac{x-1}{x+1}) \geq 0 \rightarrow \frac{x-1}{x+1} \geq 1 \rightarrow \frac{x-1}{x+1} \geq 1$ $\frac{x-1}{x+1} \geq 1 \rightarrow x-1 \geq x+1 \rightarrow -2 \geq 0$ $D = (-\infty, -1]$ $x+1 < 0 \rightarrow x < -1$