

نام و نام خانوادگی: کلاس: شماره: پاسخنامه تشریحی تکلیف شماره ۲

$f(x) = 2x^2 - 4x + k$
 $g(y) = -y^2 - 4y$
 $2x^2 - 4x + k = -y^2 - 4y$
 $4 \pm \sqrt{16-4k}$
 $\frac{-b}{2a} = \frac{4}{4} = 1$
 $\min f(x) \leq \max g(y)$
 $k-2 \leq 9$
 $k \leq 11$

$\begin{cases} x^2 + 4x & x \geq a \\ 2x + a + 2 & x \leq a \end{cases} \xrightarrow{x=a} a^2 + 4a = 2a + 2 \rightarrow a^2 + 2a - 2 = 0$
 $\boxed{f(1) = 0}$

$\begin{cases} 2x^2 - b & |x+1| > 2 \rightarrow x+1 > 2 \rightarrow x > 1 \\ a + 2x & -2 \leq x \leq -1 \end{cases}$
 $x = -1 \rightarrow 1 - b = a + 2 \rightarrow \boxed{a + b = -1}$

$D_f = 2 \rightarrow \begin{cases} 4x - a = 0 \rightarrow 12 - a = 0 \rightarrow a = 12 \\ b - 4x = 0 \rightarrow b - 4 = 0 \rightarrow b = 4 \end{cases} \rightarrow \boxed{\frac{b}{a} = \frac{1}{3}}$
 $f(x) = \sqrt{4x-a} + \sqrt{b-4x}$

الف) $\sqrt{\frac{x+1}{|x-1|}} + \sqrt{\frac{4-x}{x^2+2x+1}} \rightarrow (-\infty, 4]$
 $D_f = [-1, 2) \cup (3, 4]$
 $\Rightarrow [-1, 3) \cup (4, +\infty)$
 ب) $\sqrt{[x]-4} + \sqrt{2-[x]}$
 $\downarrow \quad \downarrow$
 $[4, +\infty) \cap (-\infty, 2) = \emptyset$
 $D_f = \emptyset$

الف) $\sqrt{\frac{x^2 - x - 6}{x^2 - 11x + 28}} \rightarrow \Delta = 25 \rightarrow \pm 5$
 $D_f = (-\infty, -2) \cup (3, +\infty)$

$\frac{-1}{x} - \frac{1}{x-2} + \frac{1}{x-3} + \frac{1}{x-4}$
 $D_f = (-\infty, -2) \cup (3, +\infty)$

ب) $\sqrt{\frac{x^2 - 2x^2 - 2x + 4}{x^2 + 2x^2 - 2x - 4}} = \sqrt{\frac{(x-1)(x^2 - x - 4)}{(x+1)(x^2 + x - 4)}}$
 $D_f = (-\infty, -2] \cup [2, 1) \cup [1, 2) \cup (2, +\infty)$

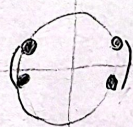
$\frac{-1}{x} - \frac{1}{x-2} + \frac{1}{x-3} + \frac{1}{x-4}$
 $D_f = (-\infty, -2] \cup [2, 1) \cup [1, 2) \cup (2, +\infty)$

الف) $\sqrt{-x} - 2 \quad D_f = (-\infty, -2]$

ب) $[x]^2 - 2[x] - 2 \neq 0 \rightarrow [x] \neq -1 \rightarrow (-\infty, -1) \cup [0, +\infty)$
 $[x] \neq 2 \rightarrow (-\infty, 2) \cup [2, +\infty)$
 $D_f = (-\infty, -1) \cup [0, 2) \cup [2, +\infty)$

الف) $\cos x \neq 0 \rightarrow x \neq k\pi + \frac{\pi}{2}$
 $\sin x \neq 0 \rightarrow x \neq k\pi$
 $D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}\}$

$\sin^2 x \leq 1 \rightarrow \sin x \leq \frac{1}{2} \rightarrow |\sin x| \leq \frac{1}{2}$
 $D_f = [k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6}]$
 $k \in \mathbb{Z}$



الف) $x-1 > 0 \rightarrow x > 1$

$\log_{\frac{1}{2}}(x-1) \leq 1 \rightarrow x-1 \geq \frac{1}{2} \rightarrow x \geq \frac{3}{2}$
 $D_f = [\frac{3}{2}, +\infty)$

ب) $x^2 - x > 0 \rightarrow (-\infty, 0) \cup (1, +\infty)$
 $x^2 - 2x > 0 \rightarrow (-\infty, 0) \cup (2, +\infty)$
 $x^2 - 2x - 2 \neq 0 \rightarrow x \neq 1, 2$
 $D_f = (-\infty, -1) \cup (-1, 0) \cup (1, 2) \cup (2, +\infty)$

الف) $\sqrt{x-x^2} \geq 1 \rightarrow x-x^2 \geq 0 \rightarrow D_f = [1, 2]$

ب) $\frac{x^2 + a}{x^2 + 1} \in \mathbb{Z} \rightarrow x \in \frac{x^2 + a}{x^2 + 1} \rightarrow D_f = \{x/x = \frac{a - 1k}{1k - 1}, k \in \mathbb{Z}\}$