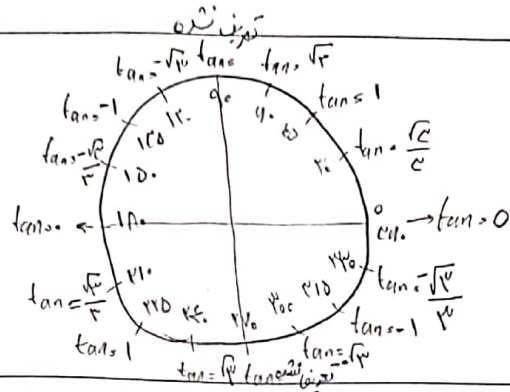


نام و نام خانوادگی: ... پاسخنامه تشریحی تکلیف شماره ... کلاس: ...



1) $\sin \frac{\pi}{4} + \cos \pi + \tan \frac{5\pi}{4} = \frac{1}{\sqrt{2}} + (-1) + 1(-1) = \frac{-\sqrt{2}}{2}$

2) $-\cos \frac{5\pi}{4} + \sin \frac{7\pi}{4} - 3 \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} - 3(\frac{\sqrt{2}}{2}) = \frac{-\sqrt{2}}{2}$

3) $\cot \frac{7\pi}{4} + 3 \cot \frac{5\pi}{4} - 2 \tan \frac{5\pi}{4} = \frac{-\sqrt{2}}{2} + 3(\frac{\sqrt{2}}{2}) - 2(-\frac{\sqrt{2}}{2}) = \frac{4\sqrt{2}}{2}$

4) $\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{4}) = \cos 0 + \sin \frac{\pi}{4} = 1 + 0 = 1$

$a^2 \in a - 2a + a + 2$
 $\Rightarrow a^2 + a - 2 = 0 \Rightarrow a = 1 \vee a = -2$

$f(x) = \begin{cases} x^2 + 2x - 1 & x > 1 \\ 2x + 3 & x \leq 1 \end{cases} \quad f(1) = 0$

$f(x) = \begin{cases} 2x^2 - b & |x+1| \geq 2 \\ a + 2x & -1 \leq x \leq 1 \end{cases}$

$f(-1) = \begin{cases} 1 - b \\ a - 4 \end{cases} \quad \begin{aligned} 1 - b &= a - 4 \\ 2 &= a + b \end{aligned}$

الف) $y = \frac{1}{x^2 - 4x + 2}$

$x^2 - 4x + 2 \neq 0 \Rightarrow x \neq 2 \pm \sqrt{2} \quad D_f = \mathbb{R} - \{2 \pm \sqrt{2}\}$

ب) $y = \frac{1}{2x^2 + 5x + 2}$

$2x^2 + 5x + 2 \neq 0 \Rightarrow 2x^2 + 2x + 3x + 2 \neq 0$
 $\Rightarrow 2x(x+1) + 3(x+1) \neq 0 \Rightarrow (x+1)(2x+3) \neq 0$
 $\Rightarrow x \neq -1, x \neq -\frac{3}{2}$

$D_f = \mathbb{R} - \{-1, -\frac{3}{2}\}$

$\omega) y = \sqrt{u^2-1} + \sqrt{u-2}$ $u-2 \geq 0 \Rightarrow u \geq 2$ $u^2-1 \geq 0 \Rightarrow \begin{cases} u \geq 1 \\ u \leq -1 \end{cases} \left. \vphantom{\begin{matrix} u-2 \geq 0 \\ u^2-1 \geq 0 \end{matrix}} \right\} D_f = [2, +\infty)$	6
$\vdash) y = \frac{\sqrt{4-3u}}{\sqrt{4u-3}}$ $4-3u \geq 0 \Rightarrow u \leq \frac{4}{3}$ $4u-3 \geq 0 \Rightarrow u \geq \frac{3}{4}$ $\left. \vphantom{\begin{matrix} 4-3u \geq 0 \\ 4u-3 \geq 0 \end{matrix}} \right\} D_f = \left[\frac{3}{4}, \frac{4}{3}\right]$	6
$y = \sqrt{4u-a} + \sqrt{b-2u}$ $12-a=0 \Rightarrow 12=a$ $b-4=0 \Rightarrow b=4$ $\left. \vphantom{\begin{matrix} 12-a=0 \\ b-4=0 \end{matrix}} \right\} \frac{b}{a} = \frac{1}{3}$	7
$\omega) y = \sqrt{\frac{u^2-u-4}{u^2-13u^2+4}}$ $u^2-u-4 \geq 0 \Rightarrow u \leq -2 \text{ or } u \geq 4$ $u^2-13u^2+4 \geq 0 \Rightarrow u \leq -\frac{2}{\sqrt{12}} \text{ or } u \geq \frac{2}{\sqrt{12}}$ $D_f = (-\infty, -2) \cup (2, 4) \cup (4, +\infty)$	8
$\vdash) y = \sqrt{\frac{u^2-2u^2-8u+4}{u^2+2u^2-8u-4}}$ $(u-1)(u+2)(u-2)$ $(u+1)(u-2)(u+4)$ $D_f = (-\infty, -1) \cup (-1, -2) \cup (2, 4) \cup (4, +\infty)$	8
$\omega) y = \sqrt{2[u]} + \sqrt{2[u]-5}$ $2[u] - 5 \geq 0 \Rightarrow [u] \geq \frac{5}{2} \Rightarrow u \geq 2.5 = D_f$	9
$\vdash) y = \sqrt{2[u]-5}$ $2[u] - 5 \geq 0 \Rightarrow [u] \geq \frac{5}{2} \Rightarrow u \geq 2.5 = D_f$	9
$\omega) y = \sqrt{\frac{u+1}{u-3}} + \sqrt{\frac{4-u}{u^2+2u+4}}$ $\frac{u+1}{u-3} \geq 0 \Rightarrow u \geq -1 \text{ or } u < 3$ $\frac{4-u}{u^2+2u+4} \geq 0 \Rightarrow u \leq 4$ $\left. \vphantom{\begin{matrix} \frac{u+1}{u-3} \geq 0 \\ \frac{4-u}{u^2+2u+4} \geq 0 \end{matrix}} \right\} D_f = [4, +\infty)$	10
$\vdash) y = \sqrt{[u]-4} + \sqrt{2-[u]}$ $[u] \geq 4 \Rightarrow u \geq 4$ $[u] \leq 2 \Rightarrow u < 3$ $\left. \vphantom{\begin{matrix} [u] \geq 4 \\ [u] \leq 2 \end{matrix}} \right\} D_f = \emptyset$	10