

نام و نام خانوادگی: نام: پاسخنامه تشریحی تکلیف شماره: کلاس: یازدهم، حتی

الف) $\sqrt{\frac{x^2 - \mu x + 1}{x(x-1)}}$

$\frac{-\mu x + 1}{x(x-1)} \geq 0 \Rightarrow \frac{1}{\mu}$

$\frac{1}{\mu} \geq 0 \Rightarrow \mu > 0$

$\frac{1}{\mu} \leq 0 \Rightarrow \mu < 0$

$D_f = (-\infty, 0) \cup [\frac{1}{\mu}, +\infty)$

ب) $\frac{1}{x+1} - \frac{\mu}{x} \geq 0 \Rightarrow \frac{x - \mu(x+1)}{x(x+1)} \geq 0$

$\frac{x - \mu x - \mu}{x(x+1)} \geq 0 \Rightarrow \frac{(1-\mu)x - \mu}{x(x+1)} \geq 0$

$D_f = \mathbb{R} - \{-1, 0, 1, -\mu, -\frac{\mu}{1-\mu}\}$

الف) $f(x) = \sqrt{(\frac{1}{\mu}x - 9)(\mu x - x^2)}$

$\frac{1}{\mu}x - 9 = 0 \Rightarrow x = 9\mu$

$\mu x - x^2 = 0 \Rightarrow x = 0$ or $x = \mu$

$D_f = (-\infty, \mu] \cup [\frac{9}{\mu}, +\infty)$

ب) $\sqrt{x-1} + \sqrt{y+1} = \mu$

$x-1 \geq 0 \Rightarrow x \geq 1$

$y+1 \geq 0 \Rightarrow y \geq -1$

$[1, +\infty) = D_f$

$\frac{\log x}{\sqrt{x^2 - 1} + 1}$

$x^2 - 1 > 0 \Rightarrow x > 1$ or $x < -1$

$\log x > 0 \Rightarrow x > 1$

$(x-1)(x+1) > 0 \Rightarrow x > 1$ or $x < -1$

$I \cap II \rightarrow (-\infty, -1] \cup (\mu, +\infty)$

$+ \frac{-1}{\mu} \frac{\mu}{x} + (-\infty, -1) \cup (\mu, +\infty) I$

$f(x) = \sqrt{\mu + ax - x^2}$

$x = -\mu \Rightarrow \mu - \mu a - \mu = 0 \Rightarrow a = -1$

$a = -\frac{1}{\mu}$

$a + b = \frac{\mu}{\mu} - \frac{1}{\mu} = 1 \Rightarrow b = \frac{\mu}{\mu}$

$D_f = [-\mu, b]$

$f(x) = \sqrt{-(x^2 + \frac{x}{\mu} - \mu)} \rightarrow \sqrt{-(x - \frac{\mu}{2})(x + \mu)}$

$f(x) = \begin{cases} \mu x - \mu & x \geq 1 \\ \mu x + \mu & x < 1 \end{cases}$

$g(x) = \sqrt{f(x) - x} \geq 0$

$f(x) \geq 1 \Rightarrow \sqrt{\mu x - \mu - x} = \mu x - \mu \geq 0 \Rightarrow x \geq 1$

$f(x) < 1 \Rightarrow \sqrt{\mu x + \mu - x} = x + \mu \geq 0 \Rightarrow x \geq -\mu$

$D_f = [-\mu, +\infty)$

$\sin \frac{\pi}{\mu} = \frac{\sqrt{\mu}}{\mu}$ $\cos \mu \pi = 1$ $f\left(\frac{\sqrt{\mu} + \mu}{\mu}\right)$	$\mu \left(\frac{\sqrt{\mu} + \mu}{\mu}\right)^{\mu} - f\left(\frac{\sqrt{\mu} + \mu}{\mu}\right)$ $\frac{\sqrt{\mu} + \mu}{\mu} - \frac{\sqrt{\mu} - \mu}{\mu} = -\frac{1}{\mu}$	6
$f(a) = \frac{a+1}{a-1}$ $f\left(\frac{a+1}{a-1}\right) = \frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = \frac{a+1+a-1}{a-1-a+1} = \frac{2a}{-2} = -a$ $a \in \mathbb{R} - \{1\}$	$\frac{a+1+a-1}{a-1-a+1} = \frac{2a}{-2} = -a$	7
$f(x) = x^{\mu} - f x$ $g(x) = \sqrt{x^{\mu} - 1}$ $f(g(a)) = -f$ $f(\sqrt{a^{\mu} - 1}) = -f$ $a^{\mu} - 1 - f(\sqrt{a^{\mu} - 1}) = -f$	$\frac{a^{\mu} + \mu}{f} = \frac{\sqrt{a^{\mu} - 1}}{f}$ $\mu \downarrow$ $\frac{a^{\mu} + \mu + 4a^{\mu}}{14} = a^{\mu} - 1$ $a^{\mu} + \mu + 4a^{\mu} - 14a^{\mu} + 14 = 0$ $a^{\mu} - 10a^{\mu} + 14\mu = 0$ $(a^{\mu} - 10)^{\mu} = 0$ $a^{\mu} = 10$	8
$x + \mu = t$ $x = t - \mu$ $f(t) = (t - \mu)^{\mu} - \mu(t - \mu) + 4$ $" = t^{\mu} - 4t + 9\mu t + 10 + 4$ $" = t^{\mu} - 11t + 14\mu$ $f(x) = x^{\mu} - 11x + 14\mu$	$f(-\mu) = 9 + \mu\mu + 14\mu = 14\mu$ $f(f) = 14 - 11f + 14\mu = \mu$ $14\mu \times \mu = 14f$	9
$f \cos^{\mu} x + \mu \cos x - \mu \mu = 0$ $\cos x = \frac{-\mu \pm \sqrt{\mu^2 + \mu^2}}{2} = \frac{1}{\mu}, -\frac{\sqrt{2}}{2}$ $\tan^{\mu} \frac{\pi}{\mu} = (\sqrt{\mu})^{\mu} = \mu$		10