

$f(x) = r(x^r - rx)$ $f\left(\sin \frac{\pi}{4} + \cos \frac{\pi}{4}\right)$ $\downarrow \text{Sing.}$ $\frac{\sqrt{2}}{2}$ $+1 \rightarrow \frac{1}{\sqrt{2}+1}$ $r(x^r - rx) = r(x^r - rx) = r(x^r - rx)$ $r\left(1 + \frac{1}{\sqrt{2}} - 1\right) - r$ $r\left(\frac{1}{\sqrt{2}}\right) - r \rightarrow \frac{r}{\sqrt{2}} - r = r\left[\frac{1}{\sqrt{2}} - 1\right]$	$f(x) = \frac{x+1}{x-1} = a \rightarrow \frac{a+1}{a-1} + 1$ $f(f(a)) = a$ $\frac{r a(a-1)}{r(a-1)} = a$ $a \in \mathbb{R} - \{1\}$	$f(x) = x^r - rx$ $g(x) = \sqrt{x^2 - 1}$ $f(g(x)) = -r \rightarrow x^r - r\sqrt{x^2 - 1} = 0 \rightarrow x = r$ $g(x) = r \rightarrow \sqrt{x^2 - 1} = r \rightarrow x^2 - 1 = r^2 \rightarrow x = \pm \sqrt{r^2 + 1}$	$f(x+r) = x^r - rx + r$ $f(-r) \times f(r)$ $\downarrow$ $x+r = -r \rightarrow x = -r$ $r^4 + r^0 + r = r^4$ $r^2 \times r = r^3$ $x = 1$ $1 - r + r = r$	$f(r \cos^r x + 2 \cos x) = \tan^r x$ $r \cos^r x + 2 \cos x = r^4 \rightarrow r \cos^r x + 2 \cos x - r^4 = 0 \rightarrow \cos^r x + 2 \cos x - r^4 = 0$ $(\cos x + r)(\cos x - r) = 0 \rightarrow \cos x = r - r \rightarrow \frac{1}{2} \sqrt{1 - \frac{r^2}{2}} = \cos x$ $\sin^2 x + \cos^2 x = 1$ $\cos x = r \rightarrow \sin^2 x = 1 - \cos^2 x = 1 - r^2 = \frac{r^2}{2}$ $\sin^2 x = 1 - \cos^2 x = 1 - r^2 = \frac{r^2}{2}$ $\tan x = \frac{\sin^2 x}{\cos^2 x} = \frac{\frac{r^2}{2}}{r^4} = \frac{r^2}{2r^4} = \frac{1}{2r^2}$
--	--	--	--	---

۲. آزمون های نوسان

نام و نام خانوادگی اساساً جوسه پاسخنامه تشریحی تکلیف شماره کلاس با هم رجیل A

۱	$f(x) = \sqrt{\frac{x-1}{x} - \frac{x}{x-1}}$ $(-\infty, 0) \cup [1, +\infty) = D_f$ $\frac{1}{x+1} - \frac{x}{x-1} = \frac{x^2 - x + 1 - x^2}{x^2 - x} = \frac{1-x}{x^2-x}$ $\frac{1}{x+1} + \frac{1}{x+5} \rightarrow x=5$ $IR - \{ \frac{1}{x+1}, \frac{1}{x+5} \} = D_f$ $x=1 \rightarrow x=5$
۲	$f(x) = \sqrt{((\frac{1}{x}) - 9)(\frac{1}{x} - 4)}$ $\frac{1}{x} - 9 = \frac{1}{x} - 4 \rightarrow x=4$ $\frac{1}{x} - 4 = \frac{1}{x} - 9 \rightarrow x=9$ $\sqrt{x-1} + \sqrt{y+1} = 3$ $x-1 > 0 \rightarrow x > 1$ $y+1 > 0 \rightarrow y > -1$ $D_f = [1, 4] \cup [9, +\infty)$
۳	$f(x) = \frac{\log x}{\sqrt{x-1} + 1}$ $x-1 > 0 \rightarrow x > 1$ $D_f = (1, +\infty)$
۴	$f(x) = \sqrt{3 + 2x - x^2}$ $x = -2 \rightarrow y = 0 \rightarrow 3 + (-2) - 4 = -1 - 4 = -5$ $\sqrt{-x^2 - 4x + 3} \rightarrow -x^2 - 4x + 3 = 0$ $x^2 + 4x - 3 = 0 \rightarrow x = \frac{-4 \pm \sqrt{16 + 12}}{2} = \frac{-4 \pm \sqrt{28}}{2}$ $D_f = [-3, 1]$
۵	$f(x) = \begin{cases} 3x-2 & x > 1 \\ 2x+3 & x < 1 \end{cases}$ $g(x) = \sqrt{f(x)} - x$ $x > 1 \rightarrow \sqrt{3x-2} - x = \sqrt{3x-2}$ $x < 1 \rightarrow \sqrt{2x+3} - x = \sqrt{2x+3}$ $D_{fg(x)} = [-3, +\infty)$