$$f_{cg}(x) = \frac{1}{\omega\sqrt{Q_{out}+|g_{ext}|}} = \frac{1}{\omega\sqrt{rg(x)}} = \frac{1}{2\omega\sqrt{\frac{1}{x\omega}}} = \frac{x}{2\omega} \quad \leftarrow \omega$$

$$f(x) = \begin{cases} \alpha & x\in\mathbb{C} \\ -1 & x>0 \end{cases} \qquad \text{if } cg(x)=-1 \longrightarrow \boxed{-1 = d_{ds_{ou}} - v_{ds}}$$

$$d(x) = \begin{cases} q & x\in\mathbb{C} \\ \frac{1}{\Gamma\pi} & x\in\mathbb{R}. \end{cases}$$

$$(\Gamma g - f)'(x) = \rho \qquad g \qquad \frac{\Gamma}{\Gamma+\sin x} - \frac{\Gamma}{g+\sin x+\Gamma\sin x} = \frac{-\sin(\sin x+\Gamma)}{\sin x+\Gamma} = -\sin x \quad) \quad = \frac{-\varepsilon}{\Gamma(g-f)(x)}$$

$$\longrightarrow (\Gamma g - f)'(x) = (-\sin x)' = -\cos x \rightarrow (\Gamma g - f)'(\frac{\Omega\pi}{\Gamma}) = -\cos\Omega\pi = \boxed{-1}$$

$$\text{ایجاد رابطه: } \frac{\Gamma_{n-1}}{\Gamma^n} = \frac{n^\Gamma + mn + 1}{n+\Gamma} \longrightarrow 0 = n^\Gamma + (\Gamma^m - n - q)n + \Gamma^n - \Gamma^n_n$$

$$\text{جایگذاری ریشه‌ها} \quad n=1 \Rightarrow 0 = (n-1)^\Gamma = n^\Gamma - \Gamma n + 1 \quad \text{ریشه مضاعف} \quad \overbrace{\qquad}^{-\Gamma} \qquad \overbrace{\qquad}^{1}$$

$$\text{طبق بیان مسئله} \begin{cases} \text{ریشه} & \Gamma^{n-1} = 1 \quad m=\Gamma \\ \text{دیگر} & \Gamma^n - n - q = 1 \end{cases} \Rightarrow \boxed{m+n=\Gamma}$$

$$\begin{cases} (-1,1) \\ (\Gamma,\Gamma) \end{cases} \quad \text{گذر دایره} \quad \frac{1}{\Gamma}n + \frac{n}{\Gamma} = \sqrt{\alpha n - 1} \longrightarrow x^\Gamma + \lambda x + 1 y = 9\alpha x - q$$

$$y = \frac{1}{\Gamma}n + \frac{\varepsilon}{\Gamma} \longrightarrow x^\Gamma + (\lambda - qq)_n + \Gamma\alpha = 0$$

$$f(-1) = \sqrt{\Gamma n - 1} \quad n\in\mathbb{Q} \longrightarrow f(q) = \sqrt{q} = \Gamma \quad \Delta=0 \longrightarrow \begin{cases} \alpha = \Gamma\sqrt{} \\ \alpha = -\Gamma \end{cases} \text{ قابل قبول}$$

$$\text{مکان هندسی: } y = \frac{\Gamma n}{n+1} \qquad f'(\Gamma) = \text{شیب خط مماس} = \boxed{\frac{\Gamma}{\Gamma^\alpha}}$$

$$|A\Gamma, B|_{\cdot} \quad m = \frac{\Delta y}{\Delta x} = \frac{\Delta-1}{\Gamma^{-\cdot}} = \frac{\Gamma}{\Gamma^\alpha}$$

$$\text{معادله خط: } \Gamma^\alpha y - \Gamma^n = n \longrightarrow y = \frac{\Gamma^n + n}{\Gamma^\alpha}$$

$$\text{ایجاد رابطه: } \frac{\Gamma_{n-1}}{\Gamma^n} = \frac{n^\Gamma + mn + 1}{n+\Gamma} \longrightarrow 0 = n^\Gamma + (\Gamma^m - n - q)n + \Gamma^n - \Gamma^n_n$$

$$\text{جایگذاری ریشه‌ها} \quad n=1 \Rightarrow 0 = (n-1)^\Gamma = n^\Gamma - \Gamma n + 1 \quad \text{ریشه مضاعف} \quad \overbrace{\qquad}^{-\Gamma} \qquad \overbrace{\qquad}^{1}$$

$$\text{طبق بیان مسئله} \begin{cases} \text{ریشه} & \Gamma^{n-1} = 1 \quad m=\Gamma \\ \text{دیگر} & \Gamma^n - n - q = 1 \end{cases} \Rightarrow \boxed{m+n=\Gamma}$$

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$$\text{معادله خط: } \Gamma^\alpha y - \Gamma^n = n \longrightarrow y = \frac{\Gamma^n + n}{\Gamma^\alpha}$$

۶- $g(x) = \frac{f(x)-1}{x} = \frac{\left(\frac{\sin x - 1}{\sin x + 1}\right)^2 - 1}{x}$ دهمین و هم ارزی ها نرم

$$\lim_{x\to 0} g(x) = \lim_{x\to 0} \frac{\left(\frac{x-1}{x+1}\right)^2 - 1}{x} = \lim_{x\to 0} \frac{-4}{(x+1)^2} = \frac{-4}{1} = -4$$

۷- تابع توبه $f(x) = -x^2 - 1$ نسبت به کدام خط موازی است؟

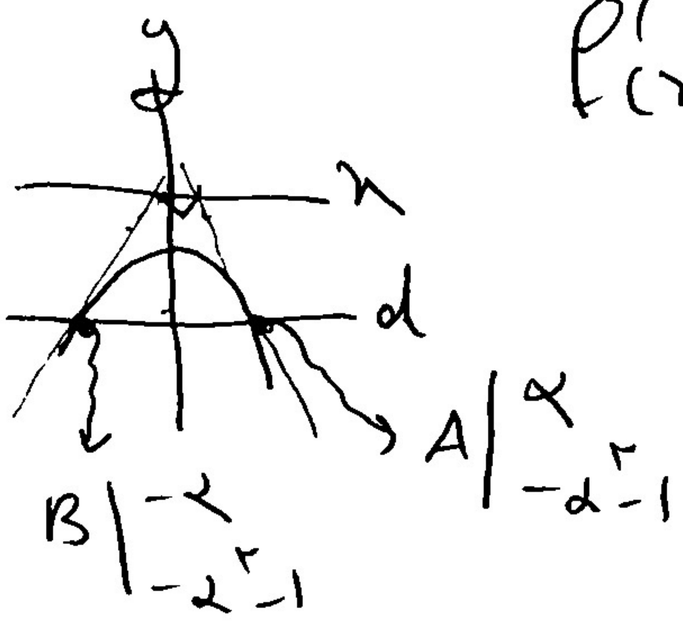
$f'(x) = -2x$ → $f'(\alpha) = -2\alpha$ ، $f'(-\alpha) = +2\alpha$

عمودند $m m' = -1$

$-2\alpha \times 2\alpha = -1$

$\alpha > 0 \Rightarrow \alpha = \frac{1}{2}$

$f(\alpha) = \frac{-5}{4}$



فاصله خط d تا سهمی برابر $\frac{5}{4}$ می باشد

۸- $d: y = mx \longrightarrow m = f'(\alpha) = \frac{f(\alpha)-0}{\alpha-0}$

$\rightarrow m = \frac{2\alpha^2+2}{\sqrt{\alpha}} + 4\alpha\sqrt{\alpha} = \frac{2\sqrt{\alpha}(4\alpha^2+2)}{\alpha}$

$\rightarrow \frac{4\alpha^2+2}{\sqrt{\alpha}} + \frac{4\alpha^2}{\sqrt{\alpha}} = \frac{8\alpha^2+4}{\sqrt{\alpha}}$

$\rightarrow \alpha^2 = \frac{1}{4} \rightarrow \alpha = \frac{-1}{2}$ ق.ق.ق

$\alpha = +\frac{1}{2}$ ✓ $\rightarrow m = f'(\frac{1}{2}) = \boxed{8\sqrt{2}}$

$m = f'(\alpha) = \frac{f(\alpha)}{\alpha}$

$\rightarrow \alpha f'(\alpha) = f(\alpha) \rightarrow \alpha \times \frac{+4\alpha^2 - 2\alpha + 1}{2\sqrt{\alpha}(-2\alpha^2+\alpha+1)^2} = \frac{\sqrt{\alpha}}{-2\alpha^2+\alpha+1}$

$\rightarrow \frac{4\alpha^2-2\alpha+1}{-4\alpha^2+2\alpha+2} = 1 \rightarrow 10\alpha^2 - 3\alpha - 1 = 0$

$\alpha = 0.5$ ✓ $\alpha = -0.2$ ق.ق.ق

$\rightarrow f(\alpha) = f(0.5) = \boxed{\frac{\sqrt{2}}{2}}$

۹- تابع $f(x) = x^3$ ضابطه دهانه‌ی $\frac{\sqrt{3}}{2}$ ام

$(f \circ g)'(x) = f'\left(\frac{1}{\sqrt{x^2-1}}\right) \times \frac{-1}{2}(x^2-1)^{\frac{-3}{2}}(2x)$

$x = \frac{\sqrt{5}}{2} \rightarrow f \circ g'(\frac{\sqrt{5}}{2}) = f'(2) \times \frac{-1}{2} \times 8 \times \sqrt{5} = \frac{15}{4} \times \frac{-1}{2} \times 8\sqrt{5} = \boxed{-15\sqrt{5}}$