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Sub:

$$f(x) = \frac{\log(x^p - x - p)}{\sqrt{x^p - 1} + 1} \rightarrow x^p - x - p = 0 \quad (1)$$

$$(x-p)(x+1) = 0 \rightarrow x = -1, x = p$$

$$x^p - 1 = 0 \rightarrow x = -1, x = 1$$

$$Df = (-\infty, -1) \cup (p, \infty) \quad (2)$$

$$p + a(-p) - (-p)^p = 0 \rightarrow p - pa - p = 0 \rightarrow 1 - a = 0 \quad (3)$$

$$a = \frac{-1}{p} \rightarrow x = -p, x = \frac{p}{p} \rightarrow b = \frac{p}{p}$$

$$\frac{-1}{p} + \frac{p}{p} = 1 \quad (4)$$

$$f(x) - x = p x - p - x = p x - p \quad (5) \quad (6)$$

$$p x - p = 0 \rightarrow x = 1 \rightarrow [1, \infty)$$

$$f(x) - x = p x + p - x = x + p \rightarrow x + p = 0 \quad (7)$$

$$Df = [-p, \infty) \quad (8)$$

$$x = -p$$

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$$f(x) = x^p - \varepsilon x \rightarrow f\left(\sin \frac{x}{p} + \cos^p x\right)$$

(4)

$$\sin \frac{x}{p} = \frac{\sqrt{p}}{p} \quad \& \quad \cos^p x = 1 \rightarrow \frac{\sqrt{p}}{p} + 1$$

$$f\left(1 + \frac{\sqrt{p}}{p}\right) = p\left(1 + \frac{\sqrt{p}}{p}\right)^p - \varepsilon\left(1 + \frac{\sqrt{p}}{p}\right) = \left(-\frac{1}{p}\right)$$

$$f(x) = \frac{x+1}{x-1} \rightarrow f(f(a)) = a$$

(✓)

$$\frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1}$$

$$= \frac{a+1}{a-1} + 1 = \frac{1+a}{a-1} \rightarrow \infty$$

$$f(f(a)) = \frac{\frac{1+a}{a-1}}{\frac{1+a}{a-1} - 1} = a \rightarrow a \neq 1 \quad \checkmark \quad a = \mathbb{R} - \{1\}$$

$$f(x) = x^p - \varepsilon x \rightarrow g(x) = \sqrt{x^{p-1}}$$

(1)

$$f(g(a)) = -\varepsilon \rightarrow g(a) = \sqrt{a^{p-1}}$$

$$(\sqrt{a^{p-1}})^p - \varepsilon \sqrt{a^{p-1}} = -\varepsilon \rightarrow a^{p-1} - \varepsilon \sqrt{a^{p-1}} = -\varepsilon$$

$$t = \sqrt{a^{p-1}} \rightarrow t^p - \varepsilon t = -\varepsilon \rightarrow t^p - \varepsilon t + \varepsilon = 0 \quad t = p$$

$$\sqrt{a^{p-1}} = p \rightarrow a^{p-1} = \varepsilon \rightarrow a = \pm \sqrt[p-1]{\varepsilon}$$

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$$f(x+\mu) = x^\mu - a x + y \rightarrow x+\mu = -\mu \quad (9)$$

$$f(-\mu) = \mu^4 + \mu_0 + y = \sqrt{1}$$

$$\mu = -4$$

$$\mu + \mu = \mu \rightarrow \boxed{x=1} \rightarrow 1 - a + y = \mu$$

$$\mu \times \mu = 1 \quad \checkmark$$

$$\mu \cos^2 x + a \cos x = \mu_1 a$$

(70)

$$\cos x (\mu \cos x + a) = \mu_1 a \rightarrow \cos x = t$$

$$\mu t^2 + a t - \frac{1}{\mu} = 1 t^2 + 10 t - 1 = 0 \rightarrow (\mu t - 1)(t + \frac{1}{\mu}) = 0$$

$$t = \left(\frac{1}{\mu} \right) \rightarrow \frac{1}{\mu} - \frac{1}{\mu} = 0 \rightarrow \mu \cos x = 1 \rightarrow \tan^2 x = \frac{\sin^2 x}{\cos^2 x}$$

$$\frac{1 - \cos^2 x}{\cos^2 x} = \frac{1}{\mu} - \frac{1}{\mu} = \mu \rightarrow f(\mu/a) = \mu$$