

$$f(x) = 1 - \frac{a}{x} \quad [6 \mu], \quad f(c) = 1 - a$$

$$f(\mu) = 1 - \frac{a}{\mu} \quad \frac{f(b) - f(a)}{b-a} \rightarrow -1$$

$$\rightarrow \frac{1 - \frac{a}{\mu} - 1 + a}{\mu} = \frac{\frac{a}{\mu}}{\mu} = \frac{a}{\mu^2} = \frac{a}{\mu}$$

Stetigkeit $\rightarrow 1 - \frac{a}{x} \xrightarrow{\text{Stetigkeit}} 1 - \frac{a}{\mu} + \frac{a}{\mu^2} = \frac{a}{\mu} \rightarrow \mu^2 = \mu \rightarrow \mu = +\sqrt{\mu}$

$$y = \mu x^2 - \omega x + 1/a = x \xrightarrow{\text{Stetigkeit}} \epsilon a x - \omega = 1 \rightarrow \epsilon a x = 4 \rightarrow x = \frac{\mu}{\epsilon a}$$

$\mu = 0 \rightarrow y = x$

$$x = \frac{\mu}{\epsilon a} \rightarrow \frac{\mu}{\epsilon a} \left(\frac{\mu}{\epsilon a} \right)^2 - \omega \left(\frac{\mu}{\epsilon a} \right) + 1/a = \frac{\mu}{\epsilon a} \rightarrow \frac{9}{\epsilon a} - \frac{\omega}{\epsilon a} + 1/a = \frac{\mu}{\epsilon a}$$

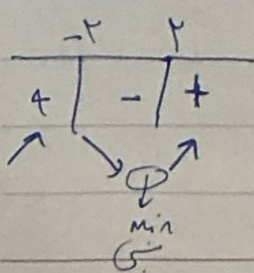
$$\rightarrow \frac{9}{\epsilon a} = \omega \rightarrow \mu \epsilon a^2 = 9 \rightarrow a^2 = \frac{1}{\epsilon} \Rightarrow a = \pm \frac{1}{\sqrt{\epsilon}} \rightarrow \frac{1}{\sqrt{\epsilon}}$$

$$y = x^2 + ax^2 - \epsilon b x - \epsilon \xrightarrow{\text{Stetigkeit}} \mu x^2 + \epsilon a x - \epsilon b = 0 \xrightarrow{\text{Stetigkeit}} b = 0$$

$$\rightarrow \mu x^2 + \epsilon a x = 0 \rightarrow x (\mu x + \epsilon a) = 0 \rightarrow \epsilon a - \epsilon = 0 \rightarrow a = \mu$$

$$y = x^2 + \mu x^2 - \epsilon \xrightarrow{(-1, 0)} \text{Lokal Min} = \sqrt{14 + \epsilon} = \sqrt{\mu_0} = \mu \sqrt{0}$$

$$y = x^2 - 1 \mu x + \mu \xrightarrow{\text{Stetigkeit}} \mu x^2 - 1 \mu = 0 \rightarrow x^2 = \epsilon \rightarrow x = \pm \sqrt{\epsilon}$$



$$x = \mu, \quad 1 - \mu \epsilon + \mu = -1 \epsilon$$



Subject:

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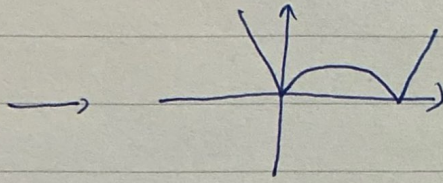
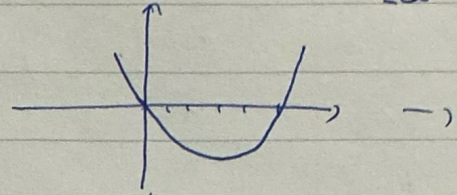
No:

$$f(u) = |u^p - a|$$

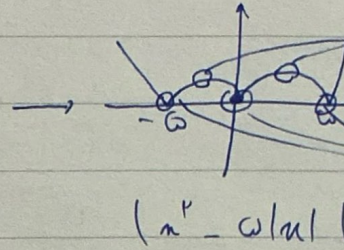
$$y = |f(u)| \Rightarrow y = |u^p - a| \rightarrow$$

$$u^p - a$$

-a



$$u^p - a$$



$$|u^p - a|$$

جیبی

$m = \text{Max } y$

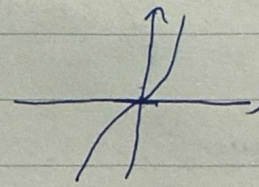
$n = \text{min } y$

$$\frac{m}{n} = \left(\frac{p}{1} \right)$$

$$y = |f(u)| \rightarrow f(u) = u(|u| + p)$$

-4

$$\begin{array}{c|c} 0 & 0 \\ \hline -u^p + p & u^p + p \\ \text{جیبی} \downarrow & \text{جیبی} \downarrow \\ -p & p \\ u = \frac{p}{p} & u = \frac{p}{p} \\ \text{O O E} & \text{O O E} \end{array}$$



$f'(0) = 0$ - نقطه ی پویش -

$$f(u) = \sqrt[p]{u^p} (u - a) \xrightarrow{\text{جیبی}} \text{جیبی} \rightarrow 0$$

-4

$$f'(u) = \frac{p}{p \sqrt[p]{u^{p-1}}} (u - a) + (-1) \sqrt[p]{u^p} = \frac{p}{\sqrt[p]{u^{p-1}}} (u - a) - \sqrt[p]{u^p} = 0$$

$$\frac{p a - p u}{\sqrt[p]{u^{p-1}}} = 0 \rightarrow p a - p u = p u \rightarrow a = 2u \rightarrow a = \frac{2u}{1}$$

$$[0, a] \rightarrow \sqrt[p]{u^p} \left| u - \frac{2u}{1} \right| = \sqrt[p]{u^p} \left(\frac{u}{1} \right) = \frac{u}{1} \rightarrow \frac{u}{1} = \frac{p}{1} \rightarrow$$

$$\rightarrow \sqrt[p]{u^p} = 1 \rightarrow u = 1 \rightarrow a = \frac{2u}{1} \rightarrow a = \frac{2 \cdot 1}{1} = 2$$

● dotnote

$$f(n) = \sqrt{n(n+1)} \begin{cases} n \geq 0, \sqrt{n^2-n} \rightarrow n \geq 1 & \textcircled{1} \\ n \leq 0, \sqrt{-n^2-n} \rightarrow -1 \leq n \leq 0 & \textcircled{2} \end{cases}$$

$$n^2 + n \leq 0 \rightarrow n(n+1) \leq 0$$

$$\textcircled{1} y' = \frac{k(n+1)^{\frac{1}{r}}}{\sqrt{n^2-n}} = 0$$

$$\frac{k(n+1)}{k-n} = \frac{1}{r}$$

$$\textcircled{2} y' = \frac{-k(n-1)^{\frac{1}{r}}}{\sqrt{-n^2-n}} = 0$$

$$\frac{-1}{+} \frac{1}{-} \frac{0}{+} \frac{0}{-}$$

$$-1 > -\frac{1}{r} > 0$$

$m < 0$

$n = 1$

$k = 1$

$$f(n) = \frac{n}{1-n(n+1)} \xrightarrow{n > 0} \frac{n}{1-n^2} \rightarrow y' = \frac{(1-n^2) + 2n(n)}{(1-n^2)^2} = 0$$

$$\rightarrow \frac{n^2+1}{(1-n^2)^2} \rightarrow n \rightarrow 1 \rightarrow \text{DNE}$$

$$n < 0 \rightarrow \frac{n}{1+n^2} \rightarrow y' = \frac{(1+n^2) - 2n^2}{(1+n^2)^2} = 0$$

$$1 - n^2 + 2n^2 = 0 \rightarrow n^2 = -1 \rightarrow \text{DNE}$$

$$1 + n^2 - 2n^2 = 0 \rightarrow 1 - n^2 = 0 \rightarrow n = \pm 1 \rightarrow \text{DNE} \quad \textcircled{\pm 1}$$

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