

A (دوره اول)

تلف حساب

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مردم حساب

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

$$f'(x) = \frac{a}{x^2}$$

$$y = \frac{a}{x^2} \Rightarrow y' = -\frac{2a}{x^3} = 0 \Rightarrow x = \pm \sqrt[3]{\frac{2a}{3}}$$

$$\Delta = 0 \Rightarrow \text{...}$$

$$y = a x^2 - 12a x + 12 \Rightarrow y' = 2ax - 12 = 0 \Rightarrow a = \pm 6$$

$$y = a x^2 + a x^2 - 12a x - 12 \Rightarrow y' = 2ax + 2ax - 12 = 0$$

$$f(x) = a x^2 - 12a x + 12 = 12(1 - x)^2$$

...

$$f(n) = \sqrt{a|n| - a}$$

$a > 0 \rightarrow \sqrt{a^r - a}$
 $a < 0 \rightarrow \sqrt{-a^r - a}$

$$f'(n) = \begin{cases} \frac{ra-1}{r\sqrt{a^r-a}} & 0 & \frac{1}{r} & 1 \\ \frac{-ra-1}{r\sqrt{-a^r-a}} & -1 & -\frac{1}{r} & 0 \end{cases}$$

Signs: $\begin{matrix} + \\ - \\ + \\ - \end{matrix}$ (alternating signs)
 Min/Max: $\begin{matrix} \text{min} \\ \text{max} \\ \text{min} \\ \text{max} \end{matrix}$

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

$n = r = \text{min}$
 $m = r = \text{max}$
 $k = r = \text{constant}$

$$y = \frac{m^r + r}{n-1+m}$$

$(1, +\infty)$ (1, 2)
 $y' = \frac{m(n-1+m) - m^r - r}{(n-1+m)^2} < 0$

$$m^r - m - r < 0$$

$\frac{-1}{+} \frac{r}{-1} +$
 $m = -1, 0, 1$

$\frac{1}{2} = 1 - m(r) \rightarrow m = \frac{1}{2}$ (III)

$(I \cap II) \rightarrow m = 0, 1$

$(1, 2)$
 (3)

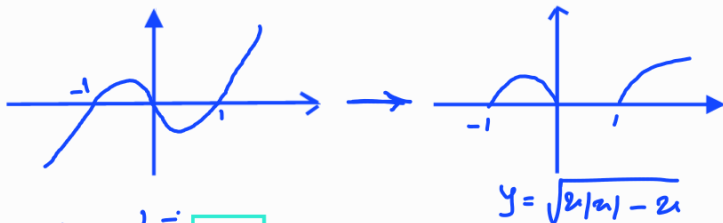
$$f(n) = \frac{n}{1-m|n|}$$

$a > 0 \rightarrow \frac{n}{1-n^r}$
 $a < 0 \rightarrow \frac{n}{1+n^r}$

$\lim_{n \rightarrow 0} \frac{f(n) - f(a)}{n-a} = 1$

$a = 1$ (10)
 $a = -1$ (11)
 حفظی کرائی جائے

$$y = |x|e^{-x} \rightarrow \begin{cases} x^2 - 2x & x \geq 0 \quad (I) \\ -x^2 - 2x & x < 0 \quad (II) \end{cases}$$



(نقطه بحرانی) $K = 4$ و (max) $M = 1$ و (min) $N = 0$

$$\frac{Km + N}{K - n} = \frac{4 \cdot 1 + 0}{4 - 0} = \frac{4}{4} = 1$$

$$D_f(x) = 1 - e^{-|x|} = 0 \rightarrow e^{-|x|} = 1 \rightarrow \begin{cases} x \geq 0 & e^x = 1 \rightarrow x = 0 \checkmark \\ x < 0 & -e^x = 1 \rightarrow e^x = -1 \times \end{cases} \rightarrow D_f = \mathbb{R} - \{1\}$$

--- تابع

$$\begin{cases} x \geq 0 \rightarrow f'(x) = \frac{1 - 2x^2 + 2x^2}{(1 - 2x^2)^2} = \frac{2x^2 + 1}{(1 - 2x^2)^2} \rightarrow 2x^2 = -1 \times \\ x < 0 \rightarrow f'(x) = \frac{1 + 2x^2 - 2x^2}{(1 + 2x^2)^2} = \frac{1 - 2x^2}{(1 + 2x^2)^2} \rightarrow 2x^2 = 1 \rightarrow x = -1 \checkmark \end{cases}$$

این نقطه بحرانی است