محل حل

Subject: .... Date: / /

$f(x)=\sqrt{x(1-|x|)} \longrightarrow x(1-|x|)=0 \longrightarrow x=0,1,-1$ ①

$$f(x)=\begin{cases}\sqrt{-x^2+x} & 0\leqslant x\leqslant 1\\ \sqrt{x^2+x} & x\leqslant -1\end{cases} \Longrightarrow f'(x)=\begin{cases}\dfrac{-2x+1}{2\sqrt{-x^2+x}} \text{ ①} & 0<x<1\\ \dfrac{2x+1}{2\sqrt{x^2+x}} \text{ ②} & x<-1\end{cases}$$

① $\rightarrow \dfrac{-2x+1}{2\sqrt{-x^2+x}}=0 \rightarrow -2x+1=0 \rightarrow x=1/2$

② $\rightarrow \dfrac{2x+1}{2\sqrt{x^2+x}}=0 \longrightarrow 2x+1=0 \rightarrow 2x=-1 \rightarrow x=-1/2$ غ ق ق

① $\rightarrow$ $0 \quad 1/2 \quad 1$; $+ \quad -$ $\rightsquigarrow$ $1/2$ ماکزیمم

$0, 1, -1, 1/2 \rightarrow$ بحرانی ، $1/2 \rightarrow$ ماکزیمم $\quad m+n+k=1+0+4=5$

Subject. $x \geq 0$ Date. / /

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$f(x) = \sqrt{x} + \sqrt{a - 2x}$ → $a - 2x \geq 0 \to a \geq 2x \Rightarrow \frac{a}{2} \geq x$

$f'(x) = \frac{1}{2\sqrt{x}} + \frac{-2}{2\sqrt{a-2x}} = 0 \to \frac{1}{2\sqrt{x}} = \frac{1}{\sqrt{a-2x}} \Rightarrow a - 2x = 4x \to$

$a = 6x \to \frac{a}{6} = x$

$f(0) = \sqrt{a}$

$f(\frac{a}{2}) = \sqrt{\frac{a}{2}}$ min

ابتدا و انتهای بازه نقطه بحرانی است

$f(\frac{a}{6}) = \sqrt{\frac{a}{6}} + \sqrt{a - \frac{2a}{6}} = \sqrt{\frac{a}{6}} + \sqrt{\frac{4a}{6}} = 3\sqrt{\frac{a}{6}}$ max $\quad D_f = [0, \frac{a}{2}]$

$\sqrt{\frac{a}{2}} \times 3\sqrt{\frac{a}{6}} = \sqrt{12} = \frac{3a}{\sqrt{12}} = \sqrt{12} \to 3a = 12 \to a = 4 \to [a] = [4] = 4$

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$\frac{x^2}{x^2-1} |x^2 - 4| \to \frac{x^2}{x^2-1}(x^2 - 4) \quad x \geq 2, x \leq -2$

$-\frac{x^2}{x^2-1}(x^2 - 4) \quad -2 < x < 2$

$f'(x) = \frac{2x(x^2-1) - 2x(x^2)}{(x^2-1)^2} \times x^2 - 4 + 2x\left(\frac{x^2}{x^2-1}\right) =$

$2x(x^2 - 1 - x^2) \Rightarrow \frac{-2x^3 + 8x}{(x^2-1)^2} + \frac{(2x^3 - 8x)(x^2)}{(x^2-1)^2} = 0$

$\frac{(2x^3 - 8x)(-1 + x^2)}{(x^2-1)^2} = \frac{2x^3 - 8x}{x^2 - 1} \Rightarrow \frac{2x(x^2-4)}{x^2-1} = 0 \to x = 0, 2, -2$

ریشه پاسخ هم همه

انتقال شرم

PARAMOUNT

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$A(0,0)\quad B(1,1)$

$y = ax^3+bx^2+cx+d \xrightarrow{(0,0)} d=0$

$(1,1) \rightarrow a+b=1$

$y' = 3ax^2+2bx+c=0 \xrightarrow{x=0} c=0$

$x=1 \rightarrow 3a+2b=0$

$\begin{cases} -2\times a+b=1 \\ \rightarrow 3a+2b=0 \end{cases}$

$b=3$

$a=-2$

$a\times b=-6$

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$f(x) = x|3-x^2| \xrightarrow{x=\frac{c}{2}} \frac{c}{2}\left|3-\frac{9}{4}\right| = \frac{3}{2}\left|\frac{12-9}{4}\right|$ مینیمم

$x=\sqrt{c} \rightarrow \sqrt{3}\,|3-3| = 0$

$f(x) = 3x-x^3 \longrightarrow f'(x) = 3-3x^2=0 \rightarrow 3(1-x^2)=0 \longrightarrow x=\pm 1$

-1	$+1$
$-$	$+$

مینیمم ماکزیمم

$(-1,-2)$

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$A(-1,1) \quad x^2|x| + 3ax^2+b \Rightarrow -x^3+3ax^2+b$

$f'(x) = -3x^2+6ax=0 \xrightarrow{x=-1} -3-6a=0 \Rightarrow a=-\frac{1}{2}$

$(-1,+1)$

$a=-\frac{1}{2} \rightarrow 1+3a+b=1 \rightarrow b=\frac{3}{2}$

$1-\frac{3}{2}+b=1$

$\frac{b}{a} = \frac{3}{2}\times -2 = -3$

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$y=\frac{(ax+3)}{(a+1)x+(a-1)}$ $\rightarrow$ $\frac{a}{a+1}$ = حاصل ضرب ها (۷)

$ax+x+a-1=0 \rightarrow x(a+1)=-a+1 \rightarrow x=\frac{1-a}{1+a}$

$\left(\frac{a}{a+1}, \frac{1-a}{1+a}\right)$

$y'=3x+1=0 \rightarrow x=-1/3$ $\quad -1/3$ $\quad -1+$ $\quad \frac{a}{a+1}=-1/3$

$y=\frac{\frac{-1}{4}x+3}{\frac{3}{4}x-\frac{a}{4}}=0 \rightarrow \frac{-1}{4}x+3=0$ $\quad 3a=-a-1$

$x=12$ $\quad 4a=-1 \rightarrow a=\frac{-1}{4}$

$A(-1/2, 3)$ $\quad y=\frac{bx^2+7}{4x^2+ax+1} \rightarrow \frac{b}{4}=\frac{-1}{2} \Rightarrow b=-2$ (۸)

$y=\frac{-2x^2+7}{4x^2+ax+1}$ $\quad 0=4x^2+ax+1 \xrightarrow{x=3} 36+3a+1=0$

$3a=-37 \rightarrow a=\frac{-37}{3}$

$\frac{b}{a}=-2 \times \frac{-3}{37}=\frac{6}{37}$

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$$f(x) = \frac{x^4}{x^3-8} \rightarrow \frac{4x^3(x^3-8) - (3x^2)(x^4)}{(x^3-8)^2} =$$

$$\frac{x^3(4x^3-32-3x^3)}{(x^3-8)^2} = \frac{x^3(x^3-32)}{(x^3-8)^2}$$

$0 \quad 2 \quad \sqrt[3]{32}$

$+ \;|\; - \;|\; - \;|\; +$

اکیدا نزولی

$(0,2) = 2$ طول بازه

$(2, \sqrt[3]{32}) = \sqrt[3]{32} - 2$

مجموع

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$$f(x) = \frac{x^4-3}{x^2-2} \rightarrow \frac{4x^3(x^2-2) - 2x(x^4-3)}{(x^2-2)^2} =$$

$$\frac{2x(4x^4-6x^2-x^4+3)}{(x^2-2)^2} = \frac{2x(3x^4-6x^2+3)}{(x^2-2)^2} = \frac{6x(x^4-2x^2+1)}{(x^2-2)^2}$$

$$\frac{6x(x^2-1)^2}{(x^2-2)^2}$$

$-2 \quad -\sqrt{3} \quad -1 \quad 0 \quad 1 \quad \sqrt{3} \quad 2$

$- \;|\; - \;|\; - \;|\; + \;|\; + \;|\; +$

اکیدا نزولی

۳ بازه