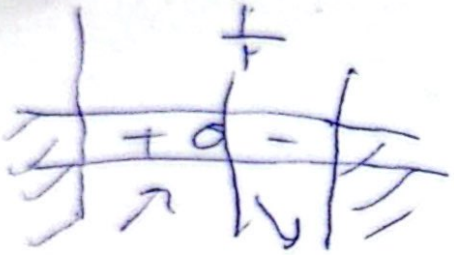
صلیبا کیاز

$$\begin{cases} \sqrt{ax^2+bx} & x \geq 0 \\ \sqrt{x+x+a} & a<0 \end{cases} \xrightarrow{\text{تابع}} f' \begin{cases} \sqrt{1-2x} \to x=\frac{1}{2}\checkmark \\ \sqrt{1+2x} \Rightarrow x=-\frac{1}{2} \times \end{cases}$$ (1)

$D_f = (-\infty,-1] \cup [0,1]$



$\frac{1}{2} = \max \cup \to m=1$ ‌ $\begin{matrix} \times \min \cap \\ \text{کیاز} = 0, \pm 1, \pm 2, \pm 3, \pm 4, \pm 5, \pm 6 \end{matrix}$ ‌ $m+n+k=$ (3)

(2)

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

$x = \frac{a}{2} / \frac{a}{4} / 0 \quad f(\frac{a}{2}) = \sqrt{\frac{a}{2}} \leftarrow \min$

$\max \to f(\frac{a}{4}) = 2\sqrt{\frac{a}{4}} \quad f(0) = \sqrt{a}$

$\sqrt{\frac{a}{2}} \times \sqrt{\frac{2a}{2}} = \sqrt{1,2} \to a = \pm 2 \quad a>0 \quad [a] = 2$

(4)

$ax^2+bx^2+cx+d \to y' = 3ax^2+2bx+c$

$\frac{0}{0} \to d=0 \quad \{x=1 \to 3a+2b=0 \quad \{x=0 \to c=0$

$\frac{1}{1} \to a+b+c=1 \xrightarrow[c=0]{} a+b=1$

$\begin{matrix} a+b=1 \\ 3a+2b=0 \end{matrix} \to a=-2 / b=3 \to \boxed{ab=-6}$

(٣)

$$f = \frac{a^4 - 4a^2}{a^2 - 1}$$

$$f' = \frac{(4a^3 - 8a)(a^2 - 1) - (2a)(a^4 - 4a^2)}{(a^2 - 1)^2} = \frac{2a^4 - 4a^2 + 8}{(a^2 - 1)^2}$$

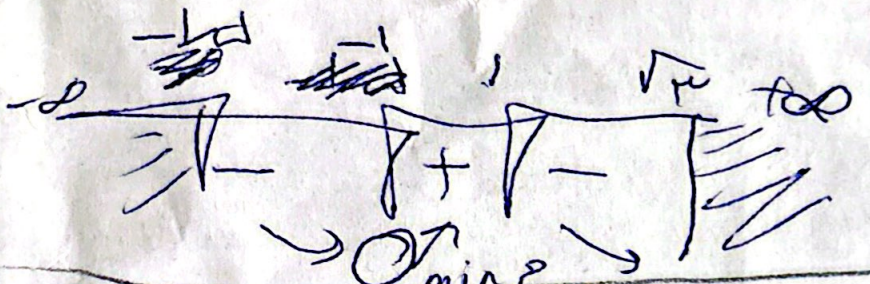
لـ $a \neq \pm 1$ دائماً موجبة على مجالها

المشتق ± 2 و 0

$f(x) = x^3 - x^2$ ← تناظر طردي $\rightarrow f' = 3x^2 - 2x = 0$ (٥)

$x \pm 1$ $\quad f(-1) = -2$ min

$f(\frac{2}{3}) = 0$



$\min f = (-1, -2)$

(٩)

$f'(x) = 0$ ← أكبر

$f(x) = |x|^3 + 3a|x|^2 + b \rightarrow f'(x) = 3x^2 + 6ax$

$x = -1 \rightarrow 3 + 6a = 0 \quad a = -\frac{1}{2} \; / \; b = \frac{3}{2}$ $\boxed{\frac{b}{a} = -3}$

(٧)

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

$y = \frac{2}{3} \rightarrow (-\frac{1}{3}, \frac{2}{3}) \quad \frac{a}{a+1} = \frac{2}{3} \rightarrow a = 2$

$y - \frac{2x+3}{2x+1} = 0 \rightarrow x = -\frac{3}{2}$

(١٠)

$b = 12$

$y = \frac{bx^2 + 7}{6x^2 + 4ax + 1}$ نفي $\frac{b}{6} = 2$ $\quad y = \frac{12x^2 - 7}{6x^2 + 4ax + 1}$

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

$a = 6 \quad \frac{b}{a} = 2$

Subject : ( ) Date : .....

$f(x) = \frac{x^4}{x^2-8} \rightarrow f' = \frac{4x^3(x^2-8) - x^4(2x)}{(x^2-8)^2}$ (9)

$\frac{x^5(x^2-24)}{(x^2-8)^2}$

$x = 0 \quad / \sqrt[3]{24}$

$-\infty \quad 0 \quad 2 \quad 2\sqrt[3]{3} \quad +\infty$

$+ \quad | \quad - \quad | \quad - \quad | \quad + \quad |$

$\searrow \quad \searrow \quad \nearrow$

(3) $2\sqrt[3]{3} - 2$ اکستریمم min

$$f'(x) = \frac{4x^3(x^2-3) - 2x(x^4-4)}{(x^2-3)^2} \quad (10)$$