نوران اسامی

19,5

$f(x) = (\frac{1}{2})^{x-2} - 1 \Rightarrow y = \sqrt{x^3 f(x+1)} \geq 0$ $\quad (\frac{1}{2})^{x-2} - 1 \geq 0 \quad (\frac{1}{2})^{x-1} - 1 \geq 0$

$x^3(2^{1-x} - 1) \geq 0$

$2^{1-x} - 1 = 0 \Rightarrow 2^{1-x} = 1 \Rightarrow x = 1$

$0 \quad 1$; $- + -$ $\quad [0 \quad 1] = D_f$

$f(-x) = ? D_f \quad f(x) = \sqrt{x + |x+2|} \overset{f(-x)}{\Rightarrow} \sqrt{-x + |2 - x|} \Rightarrow \begin{cases} -x + 2 - x, \ x < 2 \Rightarrow -2x + 2 \geq 0 \\ -x + x - 2, \ x \geq 2 \Rightarrow -2 \ \times \end{cases}$

$-2x \geq -2 \quad x \leq 1 \Rightarrow (-\infty \quad 1]$

$y = \sqrt{\frac{x-1}{f(x)}} \Rightarrow ① \quad f(x) \Rightarrow ② ③ \quad (-4)$

$-4 \quad 1 \quad 2 \quad 3$; $- + - + -$ $\quad D_f = (-4 \quad 1] \cup (2 \quad 3)$

$y_1 = \frac{1}{9x^4 - 7x^2 - 4x - 3} \quad D_{f y_1} = D_{f y_2} \quad y_2 = \frac{1}{3x^2 + ax + b} \quad \sqrt{-(a+b)} = ?$ پشت صفحه

$y = x^3 + x \Rightarrow y = \sqrt{f(x) - f(\frac{4}{x})} \Rightarrow x^3 + x - ((\frac{4}{x})^3 + \frac{4}{x}) \Rightarrow x^3 + x - \frac{64}{x^3} - \frac{4}{x} \geq 0$

$-2 \quad 0 \quad 2$; $- + - +$

$(-\infty \quad -2] \cup [2 \quad +\infty)$ $\quad$ پس <= $\quad \begin{matrix} -2 \\ 2 \end{matrix} > x^4 = 64 \quad$ <= $x^3 = \frac{64}{x^3}$ <= کمترین مقدار هر کدام

$D_f = [-2, 0) \cup [2, +\infty)$ $\quad \begin{matrix} -2 \\ 2 \end{matrix} > = x = \frac{4}{x}$

1,5

$f(2) + f(10) \Rightarrow f(x^3 + x) = 2x^2 - 1 \Rightarrow f(2) + f(10) \Rightarrow \underline{8}$

$2 = x^3 + x \Rightarrow ① \Rightarrow \overset{x=1}{f(2)} \Rightarrow 2 - 1 = ①$

$10 = x^3 + x \Rightarrow 2 \Rightarrow \overset{x=2}{f(10)} \Rightarrow 7$

$F(x) = x^3 - 6x^2 + 12x$ $\quad g(x) = x^3 + 9x^2 + 27x$ $\quad (\sqrt[3]{7} - 3 + 3)^3 \quad 7 - 27 = -20$

$(x-2)^3 + 8 \quad (x+3)^3 - 27$

$\frac{g(\sqrt[3]{7} - 3)}{f(\sqrt[3]{2} + 2)} \Rightarrow \frac{-20}{10} = -2$

$(\sqrt[3]{2} + 2 - 2)^3 \Rightarrow 2 + 8 = 10$

$f(x) = \sqrt{x - 4 + 4\sqrt{x-4} + 4} \quad g(x) = \sqrt{x - 4 - 4\sqrt{x-4} + 4} \quad f(x) + g(x) = a + b\sqrt{x + c}$

$\sqrt{(\sqrt{x-4} + 2)^2} \quad \sqrt{(\sqrt{x-4} - 2)^2} \quad \sqrt{x-4} + 2 + |\sqrt{x-4} - 2|$

همواره مثبت

$x \geq 8 \quad \sqrt{x-4} + 2 + \sqrt{x-4} - 2 \Rightarrow 2\sqrt{x-4}$

$\frac{a+b}{c} \Rightarrow \frac{0+2}{-4} = -\frac{1}{2}$

$4 \leq x < 8 \quad \sqrt{x-4} + 2 - \sqrt{x-4} + 2 \Rightarrow 4$

$g(x) = \{(2,1), (1,0), (3,5), (0,4)\} \quad f(x) = \frac{x+2}{x^2 - 4x + 3} \Rightarrow$ اشتراک دامنه $\quad f(2) = \frac{4}{-1}$

$\frac{g}{f} = \{(2 \quad \frac{1}{-4}), (0 \quad \frac{4 \times 3}{2})\}$ $\quad$ ریشه $\Rightarrow 0 = (x-1)(x-3)$ $\quad f(0) = \frac{2}{3}$

$f(x) = \{(1,۲),(۳,-1),(۴,۲),\cancel{(-1,۶)}\}$

$g(x) = \{(-۲,۳),(1,-1),(۳,۲),\cancel{(-1,۰)}\}$

$f(۲x) = \{(\frac{1}{۲}, ۲),(\frac{۳}{۲}, -1),(۲,۲),(\frac{-1}{۲}, ۶)\}$ $۲x = 1$ $۲x = ۳$ ... به همین ترتیب

$f(x^۲) = \{(-1,۲),(1,۲),(\sqrt{۳}, -1),(-\sqrt{۳}, -1),(-۲,۲),(۲,۲)\}$ $x^۲ = 1$ $x^۲ = ۳$ $x^۲ = -1$ ×

$۲g^۲(x)+1 = \{(-۲, 19),(1,۳),(۳,۹),(-1,1)\}$

$\frac{۲f}{g_{\neq 0}} \Rightarrow \{(1, \frac{۴}{-1}),(۳, \frac{-۲}{۲})\}$

دامنه x

$۹x^۴ - ۷x^۲ - ۴x - ۳ \Rightarrow (۹x^۴ - ۶x^۲ + 1)(-x^۲ - ۴x - ۴)$

$(۳x^۲-1)^۲ \quad -(x+۲)^۲ \quad = ۰$ سوال ۴ ⇐

$(۳x^۲-1)^۲ = (x+۲)^۲ \Rightarrow ۳x^۲ - 1 = x + ۲ \Rightarrow \underbrace{۳x^۲ - x - ۳}$ ریشه‌ها بدهید

جفت طرف مثبت

$\sqrt{-(-1 \times -۳)} = \frac{۲}{۳}$

یا

$a = -1 \quad b = ۳$