

12, 25

بازرسی

تکلیف 8

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$$f(u) = \left(\frac{1}{u}\right)^{n-1} - 1$$

$$y = \sqrt{n f(u+1)}$$

$$f(u+1) = \left(\frac{1}{u+1}\right)^{n-1} - 1 = \left(\frac{1}{u}\right)^{n-1} - 1$$

$$y = \sqrt{n \left(\left(\frac{1}{u}\right)^{n-1} - 1\right)} \geq 0$$

$$n^{n-1} \geq 0 \rightarrow n \geq 0$$

$$\left(\frac{1}{u}\right)^{n-1} - 1 \geq 0 \rightarrow \left(\frac{1}{u}\right)^{n-1} \geq 1 \rightarrow n-1 \leq 0 \rightarrow n \leq 1$$

[0, 1]

2

$$f(x) = \sqrt{x + |x+1|} \quad f(-x) = ?$$

$$f(-x)$$

$$-x + |1-x| \geq 0 \rightarrow |1-x| \geq x \rightarrow 1-x \geq x \rightarrow 1 \geq 2x \rightarrow 1 \geq 2x$$

$$1-x \leq -x \rightarrow x$$

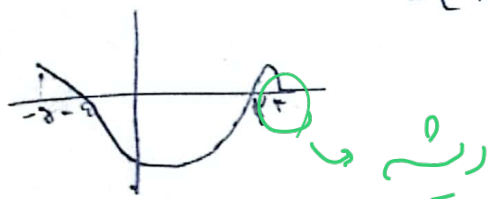
$(-\infty, 1]$

2

$$\sqrt{\frac{n-1}{f(u)}}$$

$$[-\varepsilon, 1] \cup (1, \infty)$$

1, 25



0

$$y_1 = \frac{1}{9u^2 - 4u^2 - 2u - 1}$$

$$y_2 = \frac{1}{4u^2 + 4u + 6}$$

$$\sqrt{-(a+b)} = ?$$

$$\frac{9u^2 - 4u^2 - 2u - 1}{4u^2 + 4u + 6} \rightarrow \frac{5u^2 - 2u - 1}{4u^2 + 4u + 6} \rightarrow \frac{5u^2 + 4u + 6}{4u^2 + 4u + 6} \rightarrow \frac{5u^2 + 4u + 6}{4u^2 + 4u + 6} \rightarrow \frac{5u^2 + 4u + 6}{4u^2 + 4u + 6}$$

$$f(u) = u^2 + u \quad y = \sqrt{f(u) - f\left(\frac{\varepsilon}{n}\right)}$$

$$f(u) - f\left(\frac{\varepsilon}{n}\right) = (u^2 + u) - \left(\frac{\varepsilon^2}{n^2} + \frac{\varepsilon}{n}\right) = \left(u - \frac{\varepsilon}{n}\right) \left(u^2 + u + \frac{15}{n^2}\right)$$

$$u - \frac{\varepsilon}{n} \geq 0 \rightarrow \frac{u^2 - \varepsilon}{n} \geq 0 \rightarrow u^2 - \varepsilon \geq 0 \rightarrow u^2 \geq \varepsilon \rightarrow u \geq \sqrt{\varepsilon} \quad u \leq -\sqrt{\varepsilon}$$

$[-\sqrt{\varepsilon}, 0] \cup [\sqrt{\varepsilon}, +\infty)$

2

$$f(u^2+u) = u^2-1 \quad f(2) = f(1) = ?$$

(2)

$$u=1 \rightarrow f(1) = 1^2-1 \rightarrow 0$$

$$u+1 = 2$$

$$u=2 \rightarrow f(4) = 2^2-1 = 3$$

$$f(u) = u^3 - 3u^2 + 12u \quad g(u) = u^3 + 9u^2 + 12u \quad \frac{g(\sqrt[3]{v}-3)}{f(\sqrt[3]{v}+2)}$$

$$\frac{(\sqrt[3]{v}-3)^3 + 9(\sqrt[3]{v}-3)^2 + 12(\sqrt[3]{v}-3)}{(\sqrt[3]{v}+2)^3 - 3(\sqrt[3]{v}+2)^2 + 12(\sqrt[3]{v}+2)}$$

0

$$f(u) = \sqrt{u+\varepsilon} \sqrt{u-\varepsilon} \quad g(u) = \sqrt{u-\varepsilon} \sqrt{u+\varepsilon} \quad u \geq \varepsilon \quad f(u)+g(u) = a+b\sqrt{u+c} \quad \frac{a+b}{c}$$

$$f(u)+g(u) = \sqrt{u+\varepsilon} \sqrt{u-\varepsilon} + \sqrt{u-\varepsilon} \sqrt{u+\varepsilon}$$

0

$$f(u) = \frac{u+2}{u^2-2u+2} \quad g(u) = \{(2,1), (1,0), (3,0), (0,4)\} \quad \frac{g}{f} = ?$$

0/1/5

$$(u-2)(u-1)$$

$$P_f = \{2, 1, 3\}$$

$$P_g = \{2, 0, 3, 0\} \rightarrow \frac{g}{f} = \{2, 0\} - \{1, 3\} = \{2, 0\}$$

$$\rightarrow D_{f \cap g} = \{2, 0\} \rightarrow \frac{g}{f} = \{(2, \frac{1}{2}), (0, 4)\}$$

$$f(u) = \{(1,2), (2,-1), (2,2), (-1,3)\} \quad g(u) = \{(-2,3), (1,-1), (3,2), (-1,0)\}$$

(2)

$$a) f(2u) = \{(\frac{1}{2}, 2), (\frac{2}{2}, -1), (\frac{2}{2}, 2), (-\frac{1}{2}, 3)\}$$

$$b) f(u^2) = \{(1,2), (-1,2), (5, -1), (-5, -1), (1,2), (-1,2)\}$$

$$c) 2g^2(u)+1 = \{(-2,3), (1,3), (3,3), (-1,3)\}$$

$$d) \frac{2f}{g} = \{(1, -4), (3, -1), (-1, \frac{1}{3})\}$$