

$$f(x+1) \leq \left(\frac{1}{x}\right)^{x-1} - 1 = 0 \Rightarrow x \leq 1$$

$$y = \sqrt{x^x f(x+1)} \quad \frac{-1}{-1+1} \Rightarrow Df \in [0, 1]$$

$$f(-x) = \sqrt{-x + |-x+2|}$$

$$-x+2 > 0 \Rightarrow x < 2 \Rightarrow -x -x+2 = -2x+2 > 0 \Rightarrow 2x < 2 \Rightarrow x < 1$$

$$-x+2 < 0 \Rightarrow x > 2 \Rightarrow -x+x-2 = -2 > 0 \quad \times$$

$$\Rightarrow Df \in [-\infty, 1]$$

$$y = \sqrt{x-1} \quad \frac{-1}{-1+1} \quad \frac{-1}{-1+1} \quad \frac{-1}{-1+1}$$

$$Df \in (-1, 1] \cup (1, 3)$$

$$9x^2 - 6x^2 - 4x - 3 = (3x^2 - 1) - (x+2) = (3x^2 - x - 3)(3x^2 + x + 1)$$

$$\Rightarrow 3x^2 - x - 3 = 3x^2 + ax + b \Rightarrow a = -1, b = -3$$

$$\Rightarrow \sqrt{-(a+b)} = \sqrt{4} = 2$$

$x \neq 0$

$$f(x) > f\left(\frac{1}{x}\right) \rightarrow x^3 + x > \frac{4}{x} + \frac{1}{x} \cdot x^5 \rightarrow x^4 + x > 4 + x^4$$

$$\rightarrow x^4 + x^4 - (x^4 + 4) > 0 \rightarrow (x^4 - 4)(x^4 + 1) > 0$$

$$\rightarrow (x^2 - 2)(x^2 + 1) > 0$$

$$\begin{array}{c} -2 \quad 2 \\ + \quad | \quad - \quad | \quad + \end{array} \rightarrow D = (-\infty, -2] \cup [2, +\infty)$$

$$x \leq 1 \rightarrow f(1) \leq 1 - 1 \leq 1$$

$$x \leq 2 \rightarrow f(1) \leq 1 - 1 \leq 1 \rightarrow \sqrt{x+1} \leq 1$$

$$f(x) \leq (x-2)^3 + 1 \rightarrow f(\sqrt[3]{2+x^3}) + 1 \leq 1$$

$$g(x) \leq (x+3)^3 - 2 \rightarrow f(\sqrt[3]{x^3 - 2}) - 2 \leq -2$$

$$\frac{-2}{10} \leq -2$$

$$(f(x) + g(x))' \leq f'(x) + g'(x) + 2f(x)g(x) \leq$$

$$x + 4\sqrt{x-4} + x - 4\sqrt{x-4} + 2\sqrt{x^2-16}(x-4) = 2x + 2|x-4|$$

درست‌تر مثال نیست $\rightarrow$ جواب $\leq 4 \rightarrow$ جواب $\leq \pm 4 \rightarrow$ جواب ≤ 4

$$|x-4| < x > 4 \rightarrow$$

$$x > 4 \rightarrow$$

$$\rightarrow a \leq 0, b \leq 2, c \leq -4 \rightarrow \frac{a+b}{c} = \frac{0+2}{-4} = -\frac{1}{2}$$

$$f(2) = \frac{4}{-1} = -4, f(1) = \frac{3}{0} \text{ غير معرف}, f(3) = \frac{1}{1} = 1 \quad -9$$

$$f(0) = \frac{2}{3} \rightarrow f(g_{1/8}) = \left\{ \left(0, \frac{2}{3}\right) \left(2, -\frac{1}{4}\right) \left(3, \frac{1}{1}\right) \right\}$$

$$\rightarrow f(g_{1/8}) = \left\{ (0, 2) \left(2, -\frac{1}{4}\right) \left(3, \frac{1}{1}\right) \right\}$$

$$D_{\text{eng}} = \{-1, 1, 3\} \quad -10$$

$$a) f(x) = \left\{ \left(\frac{1}{4}, 2\right) \left(\frac{3}{4}, -1\right) (2, 2) \left(-\frac{1}{4}, 4\right) \right\}$$

$$b) f(x^2) = \left\{ (\pm 1, 2) (\pm \sqrt{3}, -1) (\pm 2, 2) \right\} = \left\{ (1, 2) (\sqrt{3}, -1) (-\sqrt{3}, -1) (2, 2) \right. \\ \left. (-1, 2) (-2, 2) \right\}$$

$$c) 2g'(x) + 1 = \left\{ (-2, 19) (1, 3) (3, 9) (-1, 1) \right\}$$

$$d) \frac{2f}{g} = \left\{ \left(-1, \frac{4}{0}\right) \left(1, \frac{4}{-1}\right) \left(3, \frac{-2}{4}\right) \right\} = \left\{ (1, -4) (3, -1) \right\}$$