

W, V, D

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

(2)

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

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

∩

(2)

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

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

$$\rightarrow Df = [-\infty, 1] \checkmark$$

$$y = \sqrt{x-1} \quad \frac{-1}{1} \quad \frac{2}{2} \quad \frac{3}{3}$$

$$Df = (-1, 1] \cup (2, 3) \checkmark$$

(2)

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

(2)

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

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

خ ۵۰

اینجوری دامنه را تغییر میدی

$$f(x) > f\left(\frac{1}{x}\right) \rightarrow x^3 + x > \frac{1}{x^3} + \frac{1}{x} \rightarrow x^4 + x^2 > 1 + x^2$$

$$\rightarrow x^4 + x^2 - (x^2 + 1) > 0 \rightarrow (x^2 - 1)(x^2 + 1) > 0$$

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

-	+	-	+
+	-	+	-

$$\rightarrow D = (-\infty, -1] \cup [1, +\infty)$$

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

اگر $x \geq 1 \rightarrow f(1) \leq 1 - 1 \leq 1 \rightarrow 1 + 1 \leq 1$ ✓

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

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

$$\frac{-2}{1} \leq -2 \quad \checkmark$$

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

$$x + 4\sqrt{x-1} + x - 4\sqrt{x-1} + 2\sqrt{x^2-1}(x-1) = 2x + 2(x-1)$$

درست فرمول نیست

$f(x) \leq 1 \rightarrow \text{جواب} \leq 1 \rightarrow \text{جواب} \leq 1$

$|x-1| < x > 1 \rightarrow \text{جواب} \leq x-1 \rightarrow f(x)g(x) = 2\sqrt{x-1}$

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

$$f(2) = \frac{4}{-1} = -4, f(1) = \frac{3}{0} \text{ غير معرف}, f(3) = \frac{5}{\cancel{1}} = 5 \quad \text{جواب 9 -}$$

(1, 7.5)

$$f(0) = \frac{2}{3} \rightarrow f(g_{1/8}) = \left\{ \left(0, \frac{2}{3}\right) \left(2, -\frac{1}{4}\right) \left(3, \frac{5}{\cancel{1}}\right) \right\}$$

$$\rightarrow f(g_{1/8}) = \left\{ (0, 4) \left(2, -\frac{1}{4}\right) \left(\cancel{3}, \frac{5}{\cancel{1}}\right) \right\}$$

$$D_f = \mathbb{R} - \{1, 3\}$$

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

(2) - 10

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

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

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

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