

$$\sqrt[n]{n^2 \left(\left(\frac{1}{n} \right)^{n-1} - 1 \right)} \geq 0 \Rightarrow$$

$$D_f = [0, 1] \checkmark$$

	0	1
$\left(\frac{1}{n} \right)^{n-1} - 1$	-	+
	+	+
	-	-

$$n + |n+2| \geq 0 \quad |n+2| \geq -n \Rightarrow n \geq -1$$

$$\Rightarrow D_{f(n)} = [-1, +\infty) \Rightarrow D_{f(-n)} \Rightarrow -n \geq -1$$

$$\Rightarrow n \leq 1 \Rightarrow D_{f(-n)} = (-\infty, 1] \checkmark$$

$$\frac{n-1}{f(n)} \geq 0 \Rightarrow$$

$$D_f = [-1, 3]$$

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

	-1	-2	2	3
$\frac{n-1}{f(n)}$	-	-	+	+
	+	-	-	+
	-	+	-	+

$$\frac{1}{(n^2+m+1)(n^2-n-3)} \quad \text{با دانه} \quad \frac{1}{n^2+an+b}$$

$$\Rightarrow \frac{1}{(n^2+m+1)(n^2-n-3)} = \frac{1}{n^2+an+b} \Rightarrow \frac{1}{n^2+m+1} = \frac{1}{n^2-n-3}$$

$$a = -1 \checkmark \quad b = -3 \checkmark \quad \sqrt{-(-1-3)} = 2 \checkmark$$

$$\sqrt{n^2+m-\frac{4r}{n^2}-\frac{r}{n}} = \sqrt{\frac{(n^2-4)(n^2+4n+19)}{n^2}} \Rightarrow$$

	-2	0	2
	-	+	-
	+	+	+

$$D_g = [-2, 0) \cup (2, +\infty) \checkmark$$

$$f(x) \Rightarrow x=1 \quad x-1=1=f(x) \quad f(10) \Rightarrow 10-1=9=f(10) \quad (2)$$

$$f(1)+f(10)=1+9=10 \quad \checkmark$$

$$g(x) = (x+2)^2 - 2x \quad f(x) = (x-2)^2 + 1 \quad (2)$$

$$g(\sqrt{2}-2) = -20 \quad f(\sqrt{2}+2) = 10 \quad \frac{g(\sqrt{2}-2)}{f(\sqrt{2}+2)} = -2 \quad \checkmark$$

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

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

$$g(x)+f(x) = |\sqrt{x-2}-2| + |\sqrt{x-2}+2| \quad x \geq 1$$

$$\frac{a+b}{c} = \frac{0+2}{-2} = -\frac{1}{1} \quad \checkmark$$

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$$D_f = \mathbb{R} - \{2, 1\}$$

$$f(x) \neq 0 \quad x \neq -2$$

$$D_{f \cap g} = \{0, 2\}$$

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

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

$$ب) f(x^2) = \left\{ (1, 2), (-1, 2), (\sqrt{2}, -1), (-\sqrt{2}, -1), (+2, 2), (-2, 2) \right\} \quad \checkmark$$

$$ج) 2g^2(x)+1 = \left\{ (-2, 9), (1, 3), (3, 9), (-1, 1) \right\} \quad \checkmark$$

$$د) \frac{2f}{g} = \left\{ (1, -4), (3, -1) \right\} \quad \checkmark$$

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