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$x=8 \rightarrow g(x)=2\sqrt{x}$
 $\rightarrow f(x)=4$

$4+2\sqrt{x}=a+b\sqrt{x}+c$
 $a=8 \quad b=2$
 $8+c=2 \rightarrow c=-6$

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

راه حل تشریحی؟

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$x=2 \rightarrow \frac{2+2}{2-8+3} = \frac{4}{-3} = -\frac{4}{3}$

$x=1 \rightarrow \frac{1+2}{1-8+3} = \frac{3}{-4} = -\frac{3}{4}$

$x=3 \rightarrow \frac{3+2}{9-12+3} = \frac{5}{0} = \text{ندارد}$

$x=0 \rightarrow \frac{0+2}{0-0+3} = \frac{2}{3}$
 $f(x) = (20-4)(0+\frac{2}{3})$

$\frac{g(x)}{f(x)} = (20-\frac{1}{x}), (0, 2)$

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الف) $(\frac{1}{2}, 2)(\frac{3}{4}, -1)(2, 2)(-\frac{1}{4}, 4)$

ب) $(1, 2)(-1, 2)(\sqrt{3}, -1)(2, 2)(-2, 2)$

ج) $f(-1)^2+1=3 / f(2)^2+1=9 / f(2)^2+1=9 / f(1)^2+1=1 \rightarrow (-2, 19)(1, 3)(2, 9)(-1, 1)$

$\Rightarrow 2f = (1, 4)(3, -2)(4, 4)(-1, 4) \quad \frac{2f}{g} = (12-4)(20-1)(-\frac{1}{2}, \frac{3}{2})$

د) $2f = (2, 2)(3, 2)(4, 18)(-2, 0)$

ه) $2f+g = (2, 5)(3, 5)(-2, 4)$

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صورت سوال را شبیه نوشتی! $\sqrt{3n}$

$f(n) = \frac{\sqrt{3n}-n}{n-2} / g(n) = [n] + [-n] / D = (\frac{f}{g+1})(n)$

$\sqrt{3n}-n > 0 \rightarrow \sqrt{3n} > n \rightarrow D_f = [0, 1] \rightarrow n \neq 2$

$g(n) = [n] + [-n] \xrightarrow{-1 \leq -n \leq 0} 0 + (-1) = -1 \rightarrow g(n)+1=0 \rightarrow \text{ندارد}$

$n=0 \rightarrow 0$ قوی ۰ / $n=1 \rightarrow 1-1=0$ قوی ۰ $\rightarrow D = \{0, 1\}$

$D_f = \{0, 1\}$

$D_{\frac{f}{g+1}} = \{0, 1, 2, 3\}$

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$f(1) = 0$ $f(2) = \sqrt{2}$ $f(3) = 0$ $f(4) = 0$ $f(5) = [(1, 0), (2, \sqrt{2}), (3, 0)]$	$\frac{f(m)}{g(n)} = \left\{ (1, 0), (2, \sqrt{\frac{2}{3}}), (3, 0) \right\}$ D	6
الف) $y = (x-1)^3 + 1 \rightarrow \sqrt[3]{y-1} = x-1 \rightarrow R_f = \mathbb{R}$ $y=0 \rightarrow x=1$ $\rightarrow y(x^3 - 3x^2 + 3x - 1) = 0 \rightarrow x = \frac{3y + \sqrt{9y^2 + 4y}}{2y}, \sqrt{y^2 + y}$ بانقض ۰ و ۴ درجه ۲ فرض شده است! $R_f = (-\infty, 1] \cup (0, +\infty)$ $4y(y+1)$	$\frac{-1}{+} \frac{+}{-} \frac{+}{+}$ 1, 1.5	7
الف) $\min \frac{y}{x} \rightarrow [4, +\infty)$ $\rightarrow \max \frac{y}{x} \rightarrow (-\infty, 4]$ ب) $\min \frac{y}{-x} \rightarrow \sqrt{[-4, +\infty)} \rightarrow [2, +\infty)$ $\rightarrow \max \frac{y}{x} \rightarrow \sqrt{[4, +\infty)} \rightarrow [2, +\infty)$ $\sqrt{4x^2 - y^2}$	1.5	8
الف) IP $\rightarrow IP$ $x = \sqrt{y} \rightarrow [0, +\infty)$ ب) چون x در $[0, +\infty)$ قرار دارد ۲ طرفه	D	9
الف) $R_f = \mathbb{R} - \{2\}$ ب) $R_f = \mathbb{R} - \{2\}$	D	10

$$f(n) = \sqrt{x-r+r\sqrt{n-r}+r} = \sqrt{(\sqrt{n-r}+r)^2} = |\sqrt{n-r}+r| = \sqrt{n-r}+r \quad (1)$$

$$g(n) = \sqrt{x-r-r\sqrt{n-r}+r} = \sqrt{(\sqrt{n-r}-r)^2} = |\sqrt{n-r}-r| \xrightarrow{n \geq 1} \sqrt{n-r}-r$$

$$f(n)+g(n) = \sqrt{n-r}+r+\sqrt{n-r}-r = 2\sqrt{n-r} \xrightarrow{\begin{matrix} a=0 \\ b=r \\ c=-r \end{matrix}} \frac{a+b}{c} = \frac{r}{-r} = -\frac{1}{r}$$

$$f(n) = \frac{\sqrt{3n}-n}{n-r} \rightarrow \begin{cases} n \neq r \\ n \geq 0 \end{cases} \begin{cases} (\sqrt{3n}) \\ \sqrt{3n}-n \geq 0 \rightarrow 3n \geq n^2 \rightarrow 0 \leq n \leq r \end{cases} \rightarrow D_f = [0, r] - \{r\} \quad (2)$$

$$g(n)+1 \neq 0 \rightarrow g(n) \neq -1 \rightarrow [n] + [-n] \neq -1 \rightarrow n \in \mathbb{Z}$$

$$D_{\frac{f}{g+1}} = \left\{ D_f \cap D_g, g(n) \neq -1 \right\} = \left\{ 0, 1, r \right\}$$

$[0, r] - \{r\} \cap \mathbb{Z}$

$$(الف) \quad y = n^3 - 3n^2 + 2n - 1 + 1 = y = (n-1)^3 + 1 \quad (3)$$

$$y-1 = (n-1)^3 \rightarrow \sqrt[3]{y-1} = n-1 \rightarrow n = \sqrt[3]{y-1} + 1$$

$$R_f = \mathbb{R}$$

$$(ب) \quad y = \frac{1}{n^2-2n} \rightarrow n^2y - 2ny = 1 \rightarrow n^2y - 2ny - 1 = 0$$

$$\underline{y \neq 0} \rightarrow n = \frac{2y \pm \sqrt{4y^2 + 4y}}{2y} \rightarrow 4y(y+1) \geq 0 \rightarrow \frac{-1}{+} \frac{0}{+}$$

$$\underline{y = 0} \rightarrow 0 = 1 \times \text{صفتی وجود ندارد!} \rightarrow R_f = (-\infty, -1] \cup (0, +\infty)$$