

بواب ۱۹، ۵

$$f(n) = \sqrt{(\sqrt{n-4}+2)^2} = \sqrt{n-4} + 2 \quad g(n) = \sqrt{n-4} - 2 \Rightarrow f(n) + g(n) = \sqrt{n-4} + 2 + \sqrt{n-4} - 2 = 2\sqrt{n-4} \quad (1)$$

$$g(n) = \sqrt{(\sqrt{n-4}-2)^2} = \sqrt{n-4} - 2$$

$$\Rightarrow a+b=2, c=-4 \Rightarrow \frac{a+b}{c} = -\frac{2}{4} = -\frac{1}{2} \quad (2)$$

$$f(n) = \frac{n+2}{(n-1)(n-4)} \quad 1 \times \quad 3 \times \quad 2 \checkmark \quad 0 \checkmark \quad (2)$$

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

$$2n = 1, 2, 4, -1 \Rightarrow n = \frac{1}{2}, \frac{2}{2}, 2, -\frac{1}{2} \Rightarrow f(n) = \left\{ \left( \frac{1}{2}, 2 \right), \left( \frac{2}{2}, -1 \right), \left( 2, 2 \right), \left( -\frac{1}{2}, 4 \right) \right\} \quad (4)$$

$$n^2 = 1, 2, 4, -1 \Rightarrow n = 1, \sqrt{2}, 2 \Rightarrow f = \left\{ (1, 2), (\sqrt{2}, -1), (2, 2), (-1, 2), (-2, 2), (-\sqrt{2}, -1) \right\} \quad (5)$$

$$2g^2(n)+1 = \{(-2, 19), (1, 5), (2, 9), (1, 1)\} \quad (6)$$

$$\frac{2f}{g} = \left\{ (1, -4), (2, -1), (-1, 4) \right\} \quad (7)$$

$$h = f + g \Rightarrow h = \{(2, 0), (2, 0), (-2, 6)\} \quad (8)$$

$$D_f \Rightarrow n \geq 0 \rightarrow \sqrt{4n} - n \geq 0 \Rightarrow \sqrt{4n} \geq n \Rightarrow 2n \geq n^2 \Rightarrow n(2-n) \geq 0 \quad (9)$$

$$D_f = [0, 2] - \{2\} \quad D_g = 1, 2, 3, -1, 0$$

$$D_{f \cdot g} = (1, 4) \quad (10)$$

$$\sqrt{n^2 + 4n - 4} \Rightarrow n = 1, 2, 4 \quad (11)$$

$$\frac{f(n)}{g(n)} = \left\{ (1, 0), (2, \sqrt{2}), (4, 0) \right\} \quad (12)$$

$$y = n^3 - 2n^2 + 2n = (n-1)^2 + 1 \Rightarrow R_f = \mathbb{R} \quad (13)$$

$$n^2 - 2n = (n-1)^2 - 1 \Rightarrow R_f = (-\infty, -1] \cup (0, +\infty) \quad (14)$$

راه حل دك مېنډي!

$$R_f = -\frac{14 - \frac{40}{4}}{4} = \frac{24}{4} = 6 \quad R_f = [6, +\infty) \quad (الف)$$

$$R_f = -\frac{26 + 12}{-4} = \frac{38}{4} = 9.5 \Rightarrow R_f = (-\infty, 9.5] \quad (ب)$$

$$R_f = -\frac{14 + 12}{4} = -\frac{26}{4} = -6.5 \Rightarrow R_f = [-6.5, +\infty) \quad (ج)$$

$$R_f = -\frac{26}{-4} = 6.5 \Rightarrow R_f = [6.5, +\infty) \quad (د)$$

$$R_f = \mathbb{R} \quad (هـ)$$

$$R_f = \mathbb{R} \quad (ب)$$

(ج)  $R_f = [0, +\infty)$  چون جواب امکان می‌تواند منفی باشد

(د)  $R_f = [0, +\infty)$  چون توان دو دارد منفی می‌شود

$$\frac{c}{a} = 3 \Rightarrow R_f = \mathbb{R} - \{3\} \quad (الف)$$

$$\frac{c}{a} = 2 \Rightarrow R_f = \mathbb{R} - \{2\} \quad (ب)$$

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

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

$$R_f = \mathbb{R}$$

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

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

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