

$$f(x) = \sqrt{x+1}\sqrt{x-1}$$

$$g(x) = \sqrt{x-1}\sqrt{x-1}$$

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

$$b=2$$

$$c=-1$$

$$a=0$$

$$x=1 \rightarrow f(1) = \sqrt{1+1}\sqrt{1-1} = 0 \rightarrow f(1)+g(1) = a+b\sqrt{1+c} = 2$$

$$\rightarrow g(1) = \sqrt{1-1}\sqrt{1-1} = 0$$

$$x=9 \rightarrow f(9) = \sqrt{9+1}\sqrt{9-1} = \sqrt{10}\sqrt{8} = 2\sqrt{20}$$

$$\rightarrow g(9) = \sqrt{9-1}\sqrt{9-1} = \sqrt{8}\sqrt{8} = 8$$

$$\rightarrow b(\sqrt{1+c}-\sqrt{9+c}) = 2(2-\sqrt{10})$$

$$f = \frac{x+2}{x^2-1x+2} = \frac{x+2}{(x-1)(x-2)} \xrightarrow{x=2} -\frac{4}{1} = -4$$

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

$$\frac{4}{1} = 4$$

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

$$g(x) = \left\{ (-1, 2), (1, 2), (\sqrt{3}, -1), (-\sqrt{3}, -1), (2, 2), (-2, 2) \right\}$$

$$h(x) = g^2(x) + 1 = \left\{ (2, 8), (1, 3), (3, 9), (-1, 1) \right\}$$

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

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

$$g(x) = \left\{ (-2, 2), (1, -1), (2, 2), (-1, 0) \right\}$$

$$p \frac{f}{g} = \{1, 2\}$$

$$h = f + g = \left\{ (2, 5), (-2, 4), (3, 5) \right\} \quad D_f \cap D_g = \{2, -2, 3\}$$

$$x \neq 2 \rightarrow \frac{f(x)}{g(x)+1} \rightarrow \frac{\sqrt{3x-x}}{x-2}$$

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

$$x \neq 2 \quad x \in \mathbb{Z}$$

$$x \geq 0 \rightarrow \sqrt{3x-x} \geq 0 \rightarrow x \leq \sqrt{3x}$$

$$x^2 \leq 3x$$

$$x^2 - 3x \leq 0$$

$$x(x-3) \leq 0$$

$$D = \{0, 1, 3\}$$

$$\frac{0}{1+1-1} = 0$$

$$f(n) = \sqrt{an^2 - n^2 - \varepsilon} \rightarrow -(n^2 - an + \varepsilon) \geq 0$$

$$g(n) = \{(1, 3), (3, 2), (5, 4), (7, 1)\}$$

$$1 - \frac{1}{1 + \frac{f}{g}}$$

$$h(n) = \frac{f(n)}{g(n)} = \{(1, 0), (3, 1), (5, 0)\}$$

6

$$y = n^2 - r_n^2 + r_n \rightarrow R_f = \mathbb{R}$$

$$\Rightarrow y = \frac{1}{n^2 - r_n} \rightarrow 1 = y n^2 - r_n y n \rightarrow \Delta \geq 0 \rightarrow \varepsilon y^2 + \varepsilon y \geq 0$$

$$r_n y (y+1) \geq 0 \rightarrow \frac{1}{1 + \frac{1}{1 + \frac{f}{g}}}$$

$$R_f = (-\infty, -1] \cup [0, +\infty)$$

7

$$y = n^2 - \varepsilon n + 1 \xrightarrow{a > 0} y_s = 4 \rightarrow [4, +\infty)$$

$$y = -n^2 + 4n + 3 \xrightarrow{a < 0} y_s = \frac{-4}{-2} = 2 \rightarrow (-\infty, 12]$$

$$y = \sqrt{n^2 - \varepsilon n - 3} \xrightarrow{a > 0} y_s = -V \rightarrow [0, +\infty) \quad \frac{-\Delta}{\varepsilon a} = \frac{-(16 + 12)}{\varepsilon \times 1} = -V$$

$$y = \sqrt{4n - n^2} \xrightarrow{a < 0} y_s = \frac{-\Delta}{\varepsilon a} = \frac{-34}{-1} = 9 \rightarrow [0, 13]$$

8

$$y = n^2 - an^2 + r_{n+1} \rightarrow \mathbb{R}$$

$$y = n^2 - 4n^2 + r_{n+2} \rightarrow \mathbb{R}$$

$$y = \sqrt{n^2 - 4n^2 + an + 1} \rightarrow [0, +\infty)$$

$$y = (n^2 - \varepsilon n^2 + r_{n+1})^2 \rightarrow \mathbb{R}$$

9

$$y = \frac{r_{n+1}}{n-2} \rightarrow \mathbb{R} - \{2\}$$

$$y = \frac{r_{n+1}}{n+1} \rightarrow \mathbb{R} - \{1\}$$

10