

$$a = u$$

$$\sqrt{-n^2 + 2n - 1} = \sqrt{-(n-1)(n-1)} \quad h(n) = \frac{f(n)}{g(n)} \rightarrow h(n) = \left\{ (1,0), (2,0), \left(\frac{1+\sqrt{5}}{2}, \frac{1+\sqrt{5}}{2} \right) \right\}$$

$$\frac{1}{-1+1} = \frac{1}{0} \rightarrow \text{X}$$

$$\Delta x^2 - \epsilon - \epsilon = 2$$

الف) $\mathbb{R} \xrightarrow{\text{نقطة}} (n-1)^3 + 1 = y \quad y-1 = (n-1)^3 \rightarrow n-1 = \sqrt[3]{y-1}$
 $y=0 \rightarrow 0=1 \times$
 $\hookrightarrow y^2 - 2ny = 1$
 $y^2 - 2ny + 1 = 0$
 $\frac{2y \pm \sqrt{4y^2 - 4(-1)}}{2}$

$fy^2 + fy \geq$
 $y^2 + y \geq$
 $y(y+1) \geq \frac{-1}{+0-1} = (-\infty, -1] \cup [0, +\infty)$

ب) $y^2 + fy \geq$
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الف) $\min \mid \frac{f}{g} = 2$
 $\frac{f}{g} = 2 \rightarrow R_f = [2, +\infty)$
 $-9 + 18 = 9$

ب) $\max \mid \frac{f}{g} = 3$
 $\frac{f}{g} = 3 \rightarrow R_f = (-\infty, 12]$
 $-9 + 18 + 3 = 12$

ج) $\sqrt{x^2 - 4x - 3} = \frac{f}{g} = 2$
 $\frac{f}{g} = 2 \rightarrow R_f = [2, +\infty)$
 $-9 + 18 + 3 = 12$

د) $\sqrt{-n^2 + 4n} \mid \frac{f}{g} = \frac{14}{9}$
 $\frac{f}{g} = \frac{14}{9} \rightarrow R_f = (-\infty, 9]$
 $-9 + 18 + 3 = 12$

الف) $\rightarrow \mathbb{R}$
 ب) $\rightarrow \mathbb{R}$
 ج) $\mathbb{R} \xrightarrow{\sqrt{}} [0, +\infty)$
 د) $\mathbb{R} \xrightarrow{\sqrt{}} [0, +\infty)$

الف) $\frac{3n+1}{n-2} \rightarrow \mathbb{R} - \{2\}$
 ب) $\frac{3n+1}{n+1} \rightarrow \mathbb{R} - \{2\}$

$$f(x) = \left\{ \left(\frac{1}{x}, 2\right), \left(\frac{x}{2}, -1\right), (2, 2), \left(-\frac{1}{x}, 4\right) \right\} \quad \text{ن های } f \text{ باید مقیم بر ۲ بشوند!} \quad (۳)$$

$$f(x^2) = \left\{ (1, 2), (-1, 2), (\sqrt{x}, -1), (-\sqrt{x}, -1), (2, 2), (-2, 2) \right\} \quad \text{هر کدام از } x \text{ های } f \text{ را برابر } x^2 \text{ قرار دهیم!}$$

$$f(g(x)+1) = \left\{ (-2, 19), (1, 3), (3, 9), (-1, 1) \right\} \quad \text{این عمل روی } y \text{ های } g \text{ اعمال می شود!}$$

$$\frac{f}{g} = \left\{ \left(1, \frac{2 \times 2}{-1}\right), \left(3, \frac{2 \times 9}{1}\right), \left(-1, \frac{2 \times 4}{-1}\right) \right\} = \left\{ (1, -4), (3, -1) \right\}$$

$$(الف) \quad y = x^3 - 3x^2 + 2x - 1 + 1 = y = (x-1)^3 + 1 \quad (۷)$$

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

$$R_f = \mathbb{R}$$

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

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

$$\xrightarrow{y=0} \quad 0 = 1 \quad x \text{ حقیقی وجود ندارد!} \rightarrow R_f = (-\infty, -1] \cup (0, +\infty)$$