

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

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

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

$$D_{f \cup g} = \{x \in \mathbb{R} \mid x \geq 4\} \cup \{x \in \mathbb{R} \mid x \leq -4\} = \{x \in \mathbb{R} \mid |x| \geq 4\}$$

$$D_f = \{x \in \mathbb{R} \mid x \geq 4\} \rightarrow R - \{x \in \mathbb{R} \mid x < 4\}$$

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

$$a \left\{ \left(-\frac{1}{2}, 4\right), (2, 2), \left(\frac{1}{2}, 1\right), \left(\frac{1}{2}, 0\right) \right\}$$

$$b \left\{ (-1, 1), (2, 2), (3, 3), (4, 4) \right\}$$

$$c \left\{ (1, -4), (2, -3), (3, -2), (4, -1) \right\}$$

$$d \left\{ (3, 5), (4, 6), (5, 7), (6, 8) \right\}$$

در؟

باید نام راه حل بنویسید ارفاق نرید!

$$1 \mid x \in \mathbb{Z} \quad g(1) = 0 \rightarrow g(1) + 1 = 0 + 1 = 1 \neq 0 \quad \checkmark$$

$$1 \mid x \notin \mathbb{Z} \quad g(1) = -1 \rightarrow g(1) + 1 = -1 + 1 = 0 \quad \checkmark$$

$$\{0, 1, 2, 3\}$$

$$\begin{aligned} 1 \mid x \in \mathbb{Z} \quad g(1) &= 0 \\ 1 \mid x \notin \mathbb{Z} \quad g(1) &= -1 \\ 1 \mid x &= 0 \end{aligned}$$

$$\{0, 1, 2, 3\} \rightarrow \{0, 1, 2, 3\}$$



$$-x^2 + 4x - 4 \geq 0 \quad \rightarrow \quad x^2 - 4x + 4 \leq 0 \quad \rightarrow \quad (x-1)(x-4) \leq 0$$

$\hookrightarrow (1) \quad \hookrightarrow (4)$

$$h(x) = \left\{ (1, 0), (2, \frac{\sqrt{2}}{2}), (4, 0) \right\}$$

$$\begin{array}{c} 1 \quad 4 \\ \cdot \quad \cdot \\ \hline 1 \quad 1 \quad 1 \\ \cdot \quad \cdot \quad \cdot \\ \hline 1 \quad 2 \quad 3 \quad 4 \\ \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\ 0 \quad 4 \quad 10 \quad 16 \end{array}$$

$\rightarrow 14 - 10 + 4 = 8$

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

$$R_f = \mathbb{R}$$

این چیست؟

باید مثل خنجره عبارت! درجه ۲ فرض کنی

۱, ۲, ۵

$$1) y(x^2 - 2x) = 1 \rightarrow yx^2 - 2yx - 1 = 0 \rightarrow \frac{1}{y} = x^2 - 2x = \frac{1}{y} = x^2 - 2x - 1 + 1 = \frac{1}{y} = (x-1)^2 - 1$$

$$(x-1)^2 = 1 + \frac{1}{y} \rightarrow x-1 = \pm \sqrt{1 + \frac{1}{y}} \rightarrow 1 + \frac{1}{y} \geq 0 \rightarrow \frac{1}{y} \geq -1 \rightarrow y \leq -1 \rightarrow R_f = (-\infty, -1)$$

$$1) y = x^2 - 4x + 10$$

$$x_u = -\frac{-4}{2(1)} = 2$$

$$y_{min} = (2)^2 - 4(2) + 10 = 4 - 8 + 10 = 6 \quad R_f = [6, +\infty)$$

$$1) -x^2 + 4x + 3$$

$$x_u = -\frac{4}{2(-1)} = 2$$

$$y_{max} = -(2)^2 + 4(2) + 3 = -4 + 8 + 3 = 7 \quad R_f = (-\infty, 7]$$

$$2) x_u = \frac{4}{2} = 2 \rightarrow y_{min} = 4 - 8 + 3 = -1 \rightarrow [-1, +\infty) \quad \sqrt{[-1, +\infty)} \rightarrow R_f = [0, +\infty)$$

$$3) 4x - x^2 \quad x_u = -\frac{4}{2(-1)} = 2 \rightarrow y_{max} = 4(2) - (2)^2 = 8 - 4 = 4 \quad \sqrt{[0, 4]} \rightarrow R_f = [0, 4]$$

$$1) \mathbb{R}$$

$$1) \mathbb{R}$$

$$2) [0, +\infty)$$

$$3) [0, +\infty)$$

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$$1) y = \frac{x^2 + 1}{x-2} \rightarrow R_f = \mathbb{R} \setminus \{2\}$$

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$$1) y = \frac{x^2 + 1}{x+1} \rightarrow R_f = \mathbb{R} \setminus \{-1\}$$

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(الف) $y = n^3 - 2n^2 + 2n - 1 + 1 = y = (n-1)^3 + 1$ (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) $y = \frac{1}{n^2 - 2n} \rightarrow n^2 y - 2ny = 1 \rightarrow n^2 y - 2ny - 1 = 0$

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

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

$Dh = Df \cap Dg \rightarrow Dh = \{1, -1, 3\}$ (K)

$h(x) = f(x) + g(x) \rightarrow h = \{(1, 5)(-1, 4)(3, 5)\}$