

پایه نامه شریعی تکلیف شماره ۷ نام و نام خانوادگی: راستین توکلی کلاسی یا زهرا

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

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

$$f(x) + g(x) = 2\sqrt{x-4} = a + b\sqrt{x+c} \Rightarrow \frac{a+b}{c} \Rightarrow \frac{2}{-4} = \frac{1}{-2}$$

$$f(2) = \frac{2+2}{2-4} = -1 \quad f(1) = \frac{1+2}{1-4} = -\frac{3}{3} = -1 \quad f(3) = \frac{3}{9-4} = \frac{3}{5} \quad f(5) = \frac{2}{5}$$

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

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

$$f(x^2) = \left\{ (1, 2), (-1, 2), (2, 0), (\sqrt{2}, 1), (-\sqrt{2}, 1) \right\}$$

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

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

$$D_f \cap D_g = \{2, -2, 2\} \Rightarrow 2f = \left\{ (2, 2), (-2, 0), (2, 0) \right\} \Rightarrow h = 2f = \left\{ (2, 0), (-2, 0), (2, 0) \right\}$$

$$\left(\frac{f}{g+1}\right)(x) = \frac{\sqrt{x-4}}{x-2} \Rightarrow \frac{\sqrt{x-4}}{(x-2)([x]-[x]+1)} \Rightarrow (x-2) \neq 0 \Rightarrow x \neq 2$$

$$\left\{ \begin{array}{l} [x] - [-x] + 1 \neq 0 \\ \Downarrow \\ x \neq 2 \\ \Downarrow \\ x = -1 \end{array} \right\} = \mathbb{Z}$$

$$\left. \begin{array}{l} \sqrt{x-4} > 0 \Rightarrow x > 4 \\ \sqrt{x-4} < 0 \Rightarrow x < 4 \end{array} \right\} \Rightarrow D\left(\frac{f}{g+1}\right) = \{x \in \mathbb{Z} \mid x \neq 2\}$$

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

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

$$f(1) = \sqrt{1-4} = 0$$

$$f(4) = \sqrt{4-4} = 0$$

$$f(5) = \sqrt{5-4} = 1$$

$$y = x^2 - 2x + 1 \Rightarrow y = (x-1)^2 + 1 \Rightarrow (x-1)^2 = y-1 \Rightarrow (-\infty, +\infty) = (x-1)^2 + 1 \Rightarrow$$

$$= (-\infty, +\infty) = \mathbb{R}$$

$$y = \frac{1}{x^2 - 2x} \Rightarrow x^2 - 2x = (x-1)^2 - 1 \Rightarrow y = \frac{1}{(x-1)^2 - 1} \Rightarrow (x-1)^2 - 1 = \frac{1}{y} \Rightarrow$$

$$t \geq 0 \Rightarrow t-1 \geq -1 \quad t-1 \neq 0 \Rightarrow t-1 \in [-1, 0) \cup (0, +\infty) \Rightarrow y \in (-\infty, -1] \cup (1, +\infty)$$

$$ا) y = x^2 - 5x + 10 \Rightarrow \text{محل راس} \Rightarrow \frac{-b}{2a} \Rightarrow \frac{-(-5)}{2} = 2.5 \Rightarrow y = (2.5)^2 - 5(2.5) + 10 = 6.25 \Rightarrow$$

$$y \in [6.25, +\infty)$$

$$ب) y = -x^2 + 6x + 12 \Rightarrow \text{محل راس} \Rightarrow \frac{-b}{2a} \Rightarrow \frac{-6}{-2} = 3 \Rightarrow -(3)^2 + 6(3) + 12 = 12 \Rightarrow$$

$$y \in (-\infty, 12]$$

$$ج) y = \sqrt{x^2 - 4x - 12} \Rightarrow \text{محل راس} \Rightarrow \frac{-b}{2a} = \frac{-(-4)}{2} = 2 \Rightarrow (2)^2 - 4(2) - 12 = -16 \Rightarrow$$

$$\sqrt{x^2 - 4x - 12} \Rightarrow y \in [0, +\infty)$$

$$د) y = \sqrt{5x - x^2} \Rightarrow \text{محل راس} \Rightarrow \frac{-b}{2a} = \frac{-5}{-2} = 2.5 \Rightarrow 5(2.5) - (2.5)^2 = 6.25 \Rightarrow \sqrt{5x - x^2} \Rightarrow$$

$$y \in [0, 2.5]$$

$$ا) y = x^2 - 6x^2 + 4x + 1 \Rightarrow \text{محل راس} \Rightarrow \frac{-b}{2a} \Rightarrow \frac{-4}{-6} = \frac{2}{3} \Rightarrow y \in \mathbb{R}$$

$$ب) y = x^3 - 6x^2 + 4x + 2 \Rightarrow \text{محل راس} \Rightarrow \frac{-b}{2a} \Rightarrow \frac{-6}{2} = -3 \Rightarrow y \in \mathbb{R}$$

$$ج) y = \sqrt{x^3 - 6x^2 + 4x + 1} \Rightarrow \sqrt{\mathbb{R}} \Rightarrow y \in [0, +\infty)$$

$$د) y = (x^3 - 6x^2 + 4x + 1)^2 \Rightarrow \sqrt{\mathbb{R}} \Rightarrow y \in [0, +\infty)$$

$$y = \frac{2x+1}{x-2} \Rightarrow x = \frac{-2y-1}{y-2} \Rightarrow \frac{2y+1}{y-2} \Rightarrow y \neq 2 \Rightarrow \mathbb{R} - \{2\}$$

$$y = \frac{2x+1}{x+1} \Rightarrow x = \frac{-y-1}{y-2} \Rightarrow \frac{y+1}{y-2} \Rightarrow y \neq 2 \Rightarrow \mathbb{R} - \{2\}$$

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

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

$$D \frac{f}{g+1} = \left\{ Df \cap Dg, g(n) \neq -1 \right\} = \left\{ 0, 1, r \right\}$$

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