

حسین محمدی نازم 8 - سوال 1

۲. آفرین

$$2u + \sqrt{u-4} = t^2 + 4 + t^2 = (t+2)^2$$

$$f(u) = |t+2| \sqrt{u-4} + 2$$

$$g(u) = |t-2| \rightarrow t = \sqrt{u-4}$$

$$u - 4 = \sqrt{u-4} = t^2 + 4 - 4 = (t-2)^2$$

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

$$\frac{0+2}{-4} = -\frac{1}{2}$$

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

$$a=0, b=2, c=-4$$

سوال 2

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

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

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

$$f(u) = \{1, 2, 4, -1\} \in \mathbb{R} \rightarrow \left(\frac{1}{3}, 2\right), \left(\frac{2}{3}, -1\right), \left(\frac{4}{3}, -1\right), \left(-\frac{1}{3}, 4\right)$$

سوال 3

$$f(u) \xrightarrow{u \rightarrow 1} \left(1, 2\right), \left(\frac{1}{2}, 4\right), \left(\frac{2}{3}, -1\right), \left(-\frac{1}{3}, 4\right)$$

$$g(u) + 1 \rightarrow \left\{(-1, 3), (2, 4), (4, 2), (2, 1)\right\} \rightarrow u = -2$$

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

سوال 4

$$f \cap g = (2, 3, -2) \rightarrow f = \{(2, 2), (3, 2), (-2, 0)\}$$

$$u = \frac{1}{2} \rightarrow 2+3=5, \quad u = 2 \rightarrow 2+3=5, \quad u = -2 \rightarrow 0+3=3$$

$$h = \{(2, 5), (3, 5), (-2, 3)\}$$

فقط اعداد صحیح غیر منفی
است و g غیر صحیح و برابر است
برای u مقدارش است

$$\rightarrow Df = \sqrt{u} \rightarrow \sqrt{u} \geq u \rightarrow u \geq u^2 \rightarrow u(u-1) \geq 0$$

$$g(u) = [u] + [-u] = g(u) = 0$$

سوال ۶ -

~~$f(x) = \{(1,0), (2,\sqrt{2}), (3,0), (4,0)\}$~~

$f(x) = \{(1,0), (2,\sqrt{2}), (3,0), (4,0)\} \rightarrow h(x) = \sqrt{x}$
 $h(1) = 0$
 $h(4) = 2$

$h = \{(1,0), (2,\sqrt{2}), (3,0)\}$ Ⓟ

الف) $x^2 - 2x + 1 = (x-1)^2 \in \mathbb{R} \rightarrow R_f = \mathbb{R}$ Ⓟ

ب) $\frac{1}{x^2 - 2x} = \frac{1}{x(x-2)}$ Ⓟ

$R_f = [-\infty, -1] \cup (0, 2) \cup [4, +\infty)$
 $x - 2x \in [1, 2) \cup (2, +\infty)$

سوال ۸ -

الف) $u_5 = \frac{-b}{2a} = \frac{6}{2} = 3 \rightarrow f - 1 + 10 = 6 \rightarrow R_f = [6, +\infty)$

ب) $u_5 = \frac{-6}{-2} = 3 \rightarrow -9 + 11 + 2 = 4 \rightarrow (-\infty, 4]$

ج) $u_5 = \frac{4}{2} = 2 \rightarrow f - 1 - 2 = -1 = y_5 \rightarrow \sqrt{-1 + \infty} \rightarrow [0, +\infty)$

د) $u_5 = \frac{-6}{-2} = 3 \rightarrow y_5 = 11 - 9 = 2 \rightarrow \sqrt{-\infty, 2} = [0, 2]$ Ⓟ

سوال ۹ -

الف) توان ۳ برتر از توان ۲ $\rightarrow R_f = \mathbb{R}$

ب) توان ۷ توان ۴ $\rightarrow R_f = \mathbb{R}$

ج) توان ۴ توان ۳ $\rightarrow R_f = [0, +\infty)$

د) توان ۲ توان ۱ $\rightarrow R_f = [0, +\infty)$ Ⓟ

سوال ۱۰ -

الف) $\frac{x+1}{x-2} = R_f = \mathbb{R} - \{2\}$ Ⓟ

ب) $\frac{x+1}{x+1} = R_f = \mathbb{R} - \{1\}$ Ⓟ