

حل المسألة 8 - 1
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$$f(x) = \sqrt{x-1} \quad f'(x) = \frac{1}{2\sqrt{x-1}}$$

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

$$x-1 = t^2 \quad x = t^2 + 1 \quad f(x) = t$$

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

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

$$f(x) + g(x) = (\sqrt{x-1} + 1) + (\sqrt{x-1} - 1) = 2\sqrt{x-1}$$

$$a=0, b=1, c=-1$$

- 2

$$f(x) = \frac{x+1}{x^2-x+1} \quad f(0) = \frac{1}{1} = 1 \quad g(0) = \frac{1}{1} = 1$$

$$f(0, \frac{1}{2}), (1, 0), (2, -1), (3, 0)$$

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

$$f(x) = \frac{x+1}{x^2-x+1} \rightarrow f(1) = \frac{2}{1} = 2 \quad f(2) = \frac{3}{1} = 3$$

- 3

$$f(x) = \frac{x+1}{x^2-x+1} \rightarrow f(1) = 2, f(2) = 3, f(3) = 0$$

$$g(x) = \frac{x+1}{x^2-x+1} \rightarrow g(1) = 2, g(2) = 3, g(3) = 0$$

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- 4

$$f(x) = \frac{x+1}{x^2-x+1} \rightarrow f(1) = 2, f(2) = 3, f(3) = 0$$

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

فقط اعداد صحیح غیر منفی
است و g غیر صحیح و برابر 1 است
برای x مقدارش 1 است

$$g(x) = 1 \rightarrow D = \{0, 1, 2\}$$

$$Df = \sqrt{x} \rightarrow \sqrt{x} \geq x \rightarrow x \geq x^2$$

$$x \geq x^2 \rightarrow x \neq 1$$

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

سوال ۶ -

~~$f(x) = \{(1,0), (2,\sqrt{2}), (4,0), (9,0)\}$~~

$f(x) = \{(1,0), (2,\sqrt{2}), (4,0), (9,0)\} \rightarrow h(x) = \sqrt{x}$
 $h(1) = 0$
 $h(4) = 2$

$h = \{(1,0), (2,\sqrt{2}), (4,0)\}$

سوال ۷ -

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

ب) $\frac{1}{x^2 - 2x} = \frac{1}{(x-1)^2 - 1} = \frac{1}{(x-1)^2 - 1} \rightarrow R_y = (-\infty, -1] \cup (0, +\infty)$

سوال ۸ -

الف) $u_5 = \frac{-b}{2a} = \frac{9}{2} = 4.5 \rightarrow 4.5 - 1 + 10 = 13.5 \rightarrow R = [4.5, +\infty)$

ب) $u_5 = \frac{-b}{-2} = 3 \rightarrow -9 + 11 + 2 = 14 \rightarrow (-\infty, 14]$

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

د) $u_5 = \frac{-b}{-2} = 3 \rightarrow 9 - 1 - 9 = -1 \rightarrow \sqrt{-1} = i \rightarrow [0, 2]$

سوال ۹ -

الف) $R_f = \mathbb{R} \rightarrow$ توان ۳ بر ۲ است

ب) $R_f = \mathbb{R} \rightarrow$ توان ۷ توان ۲

ج) $R_f = [0, +\infty) \rightarrow$ توان ۲

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

سوال ۱۰ -

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

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