

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره کلاس: *بسم الله الرحمن الرحيم*

$$(f+g)' = f' + g' + 2fg \rightarrow f' + g' = (x + 4\sqrt{x-4}) + (x - 4\sqrt{x-4}) = 2x$$

$$\rightarrow fg = \sqrt{(x + 4\sqrt{x-4})(x - 4\sqrt{x-4})} \rightarrow \sqrt{x^2 - 16x + 64} \rightarrow \sqrt{(x-4)^2} \xrightarrow{x \geq 4} x-4$$

$$(f+g)' = 2x + 2(x-4) = 4x - 8 = 4(x-4) = f+g = \sqrt{4(x-4)} = 2\sqrt{x-4}$$

$$a=0 \quad b=2 \quad c=-4 \leftarrow \frac{0+2}{-4} = -\frac{1}{2}$$

۱

مخرج $\rightarrow x^2 - 4x + 2 = (x-1)(x-3) \xrightarrow{\text{اینها}} \{+16+2\} \xrightarrow{\text{پس از اینها هم مشترک}} 0, 2 \rightarrow f(0) = \frac{2}{1}$

$\rightarrow f(2) = -4 \rightarrow -\frac{1}{4} \rightarrow \frac{2}{f} = \left\{ (0, 6), (2, -\frac{1}{4}) \right\}$

$g(x) = 1 \rightarrow \frac{f}{g} = \frac{f}{1} = f$

$\downarrow$
 $\frac{f}{g} = \frac{2}{1} = 2$

۲

$$f(x_2) = \left\{ \left(\frac{1}{2}, 6\right), \left(\frac{3}{2}, 1\right), (2, 6), \left(-\frac{1}{2}, 6\right) \right\}$$

(الف)

$$f(x_2) = \left\{ (-2, 2), (2, 2), (-1, 2), (1, 2) \right\}$$

(ب) همین ۵ تا جوابه برقرار است

$$2f'(x) + 1 = \left\{ (-2, 19), (1, 6), (2, 9), (-1, 1) \right\}$$

(ج)

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

$$x=1, 2 \rightarrow g \neq 0$$

(د)

$$D_f \cap D_g = \{2, 6, -2\} \xrightarrow{x=1} 2 \times 1 + 2 = 0 \mid x = -2 \leftarrow 0 + 6 = 6$$

$$x=2 \leftarrow 2 \times 1 + 2 = 0 \leftarrow h = \{(2, 0), (-2, 6), (2, 0)\}$$

۴

$$D_f = 2x \geq 0 \rightarrow x \geq 0 \quad \& \sqrt{3x} \geq x \rightarrow 3x \geq x^2 \rightarrow x(3-x) \geq 0$$

$$\& x \neq 2 \rightarrow D_f = [0, 3] - \{2\}$$

$$[x] + [-x] \xrightarrow{\text{تکامل}} x \in \mathbb{Z} \rightarrow = 0 \quad \& \quad x \notin \mathbb{Z} \rightarrow = -1$$

$$\rightarrow x \in [0, 3] - \{2\} \xrightarrow{\text{اعمال}} 0, 1, 2 \rightarrow D_{\frac{f}{g+1}} = \{0, 1, 2\}$$

$$\begin{array}{c} \downarrow \quad \downarrow \\ 0 \quad 2 \\ \hline -4+4- \end{array}$$

۵

$\Delta x - x^2 - f \geq 0 \rightarrow x^2 - \Delta x + f \leq 0 \rightarrow (x-1)(x-f) \leq 0 \rightarrow 1 \leq x \leq f$ $f(1) = 0 \quad h(1) = \frac{0}{1} \quad \quad f(r) = \sqrt{r} \quad h(r) = \frac{\sqrt{r}}{r} \quad \quad f(f) = 0 \quad h(f) = \frac{0}{f}$ $h = \{(1,0), (r, \frac{\sqrt{r}}{r}), (f,0)\}$	٦
$y = (x-1)^5 + 1 \rightarrow y-1 = (x-1)^5 \rightarrow x = 1 + \sqrt[5]{y-1} \rightarrow R_f = \mathbb{R}$	الف
$yx^2 - yx = 1 \rightarrow yx^2 - yx - 1 = 0 \rightarrow x = \frac{y \pm \sqrt{(y)^2 - 4(-1)(-1)}}{2y}$ $\rightarrow x = 1 \pm \frac{\sqrt{y^2 + y}}{y} = y^2 + y \geq 0 = y \leq -1 \text{ و } y > 0 \rightarrow R_f = (-\infty, -1] \cup (0, +\infty)$	ب
$a=1 \quad b=-f \quad c=0 \quad x_5 = -\frac{-f}{1} = f \quad y_5 = f \xleftarrow{a \geq 0} R_f = [f, +\infty)$	الف
$a=-1 \quad b=f \quad c=r$ $x_5 = \frac{-f}{-1} = f \quad y_5 = f \xleftarrow{a < 0} (-\infty, f] = R_f$	ب
$x_5 = -\frac{-f}{1} = f \quad y_5 = -f \xrightarrow{a > 0} [-f, +\infty) \rightarrow \sqrt{[0, +\infty)} = [0, +\infty)$	ج
$x_5 = \frac{-f}{-1} = f \quad y_5 = f \xrightarrow{a < 0} [-f, f) \rightarrow \sqrt{[-f, f)} = [0, f]$	د
$R_f = \mathbb{R}$	الف
$R_f = \mathbb{R}$	ب
$R_f = \sqrt{\mathbb{R}} = [0, +\infty)$	ج
$R_f = (\mathbb{R})^5 \geq 0 \rightarrow R_f = [0, +\infty)$	د
$y = \frac{r^2x+1}{x-r} = \frac{ry+1}{y-r} = R_f = R \cdot \{r\}$	الف
$y = \frac{r^2x+1}{x+1} = \frac{-y+1}{y-r} = R_f = R \cdot \{r\}$	ب