

$$\sqrt{x+2\sqrt{x-4}} + \sqrt{x-2\sqrt{x-4}} = A \quad \text{و} \quad \sqrt{x-4} = a$$

$$A^2 = x+a + x-a + 2\sqrt{x^2-a^2} \quad a^2 = 14(x-4)$$

$$A^2 = 2(x + \sqrt{x^2-a^2}) \quad a^2 = 14x-56$$

$$A = \sqrt{2} (\sqrt{x + \sqrt{x^2-a^2}})$$

$$A = \sqrt{2} (\sqrt{x + \sqrt{x^2-14x+56}})$$

$$= \sqrt{2} (\sqrt{x + \sqrt{(x-7)^2}})$$

$$= \sqrt{2} (\sqrt{x + |x-7|}) \quad x \geq 7$$

$$= \sqrt{2} (\sqrt{2x-7})$$

$$= \sqrt{2} \times \sqrt{2(x-4)} \quad x \geq 7 \quad x-4 \geq 0$$

$$A = \sqrt{2} \times \sqrt{2} \times \sqrt{x-4}$$

$$A = 2\sqrt{x-4} \implies a=0 \quad b=2 \quad c=-4$$

$$\frac{a+b}{c} = \boxed{\frac{-1}{2}}$$

$$f(x) = \frac{x+2\sqrt{x-4}}{x^2-4x+4} \quad \text{و} \quad Dg = \{2, 0\}$$

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

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

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

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



$$4) \frac{f}{g} = \left\{ (1, -5), (2, -1) \right\}$$

s.a.m

$$f+g = \{(r, 0), (r, 0), (-r, 0)\}$$

$$f(x) = \frac{\sqrt{rx} - x}{x-r} \quad \sqrt{rx} - x \geq 0$$

$$x \leq \sqrt{rx} \quad x - \sqrt{rx} \leq 0 \quad \sqrt{x}(\sqrt{x} - \sqrt{r}) \leq 0$$

$$g(x) = [x] + [-x] \rightarrow \begin{matrix} 2 & 0 & 0 & +1 & = & 1 \\ \hline & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \end{matrix}$$

$$D_{f(x)} \cap D_{g(x)} = \{0, 1, r\}$$

$$\begin{matrix} -2r & + & 2x & - & r & \geq & 0 \\ 2r & - & 2x & + & r & \leq & 0 \end{matrix} \quad \begin{matrix} 1 & & r \\ \hline + & 0 & - & 0 & + \end{matrix} \quad y = \sqrt{4x - x^2 - r}$$

$$h(x) = \frac{p(x)}{q(x)} = \{(1, 0), (r, \frac{\sqrt{r}}{r}), (r, 0)\}$$

$$u) \quad y = x^r - rx^r + rx - 1 + 1$$

$$y = (x-1)^r + 1$$

$$y-1 = (x-1)^r$$

$$\sqrt[r]{y-1} = x-1 \rightarrow x = \sqrt[r]{y-1} + 1 \rightarrow R_f = R_1$$

$$v) \quad y = \frac{1}{x^r - rx} \rightarrow yx^r - r y x = 1$$

$$yx^r - r y x - 1 = 0$$

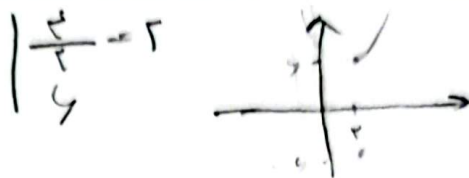
$$x = \frac{ry \pm \sqrt{r^2 y^2 + ry}}{ry} \rightarrow ry^r, ry \geq 0$$

$$R_f = R_1 - (-1, 0]$$

$$x \in R_1 \rightarrow \begin{matrix} 1 & 0 \\ \hline + & - & 1 & + \end{matrix}$$

$$\begin{matrix} -1 & 0 \\ \hline + & - & 1 & + \end{matrix}$$

ا) $y = 2^x - 8x + 10$
 $R_f = [4, +\infty)$



-1

ب) $y = -x^2 + 4x + 5$ $\frac{f(4+1)}{f} = \frac{f'1}{f} = 1$ $R_f = (-\infty, 1]$

ج) $\sqrt{x^2 - 8x + 5}$ $\frac{f(1+1)}{f} = -1$ $\sqrt{[-1, +\infty)} = \boxed{[0, +\infty)}$ R_f

د) $\sqrt{-x^2 + 4x}$ $\frac{f(2+0)}{f} = 0$ $R_f = \sqrt{(-\infty, 0]} = [0, 2]$

هـ) $R_f = R_1$

و) $R_f = R_1$

ز) $R_f = \sqrt{R_1} = [0, +\infty)$

ح) $R_f = R_1^2 = [0, +\infty)$

ا) $y = \frac{x+1}{x-1}$ $R_f = R_1 - \{1\}$

(10)

10

$\frac{x+1}{x-1} = y$ $x = \frac{-y-1}{+y-1} = \frac{y-1}{y-1}$ $R_1 = \{1\}$ (10)

ب) $y = \frac{x+1}{x+1}$ $R_f = R_1 - \{1\}$