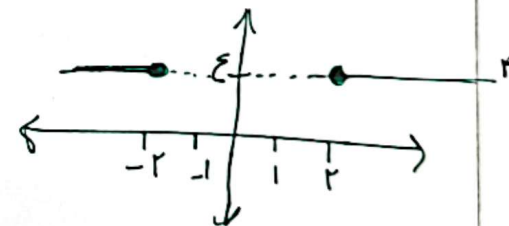


$f(x) = \sqrt{x x }$, $g(x) = x$ $D_f = [0, \infty)$, $D_g = \mathbb{R}$	$f(x) = \frac{(x+c)(x+1)+x+E}{x^2+\delta x+\gamma}$, $g(x) = 1$	1
$f(x) = \frac{x \sin x - x \sin x}{x \sin x - x}$, $g(x) = x \sin x$ $f(x) = \frac{x \sin(x \sin x - x)}{x \sin x - x} = x \sin x$	$f(x) = \frac{x}{ x }$, $g(x) = \frac{ x }{x}$ $D_f = \mathbb{R} - \{0\}$ $D_g = \mathbb{R} - \{0\}$	1
$f(x) = \left[\frac{x}{x^2+1} \right]$, $g(x) = [x - [x]]$ $D_f = \mathbb{R}$ $D_g = \mathbb{R}$	$f(x) = \frac{1}{[x]}$, $g(x) = \frac{1}{x[x]}$ $D_f = 0 < x < 1 \Rightarrow 0 < x < \frac{1}{x}$ $D_g = 0 < x < 1$	2
$f(x) = \frac{1}{\sqrt{x- x }}$, $g(x) = \frac{1}{\sqrt{ x -x}}$ $D_f = \emptyset$ $D_g = (-\infty, 0)$	$f(x) = \begin{cases} \frac{x^2-x}{x-1} ; x \neq 1 \\ x^2+x ; x=1 \end{cases}$, $g(x) = x^2+x$ $x^2+x = \frac{x^2-x}{x-1} ; x=1 \Rightarrow x^2+x = x^2-x \Rightarrow x=1$	3
$f(x) + g(x) = x^2 + x + 1$ $f(x) - g(x) = x^2 - x + 1$ $f(x) - g(x) = (x^2 + 1)^2 - x^2 = x^4 + 2x^2 + 1 - x^2 = x^4 + x^2 + 1$	$f(x) - g(x) = x^2 - x + 1$, $f(x) + g(x) = x^2 + x + 1$ $2f(x) = 2x^2 + 2 \Rightarrow f(x) = x^2 + 1$	3
$f \times g = (x - \sqrt{x^2 - \varepsilon})(x + \sqrt{x^2 - \varepsilon}) \Rightarrow x^2 - x^2 + \varepsilon = \varepsilon$ $D_f = D_g \rightarrow x^2 - \varepsilon \geq 0 \rightarrow x^2 \geq \varepsilon$ $\Rightarrow \left\{ \begin{matrix} x \geq \sqrt{\varepsilon} \\ x \leq -\sqrt{\varepsilon} \end{matrix} \right\}$		4
$f(x) = \frac{ax+b}{x^2-mx+n}$	$\frac{2ax+E}{2x^2-2mx+\gamma}$ $2ax = x \rightarrow 2a = 1 \rightarrow a = \frac{1}{2}$ $-b = E \rightarrow b = -E$ $-2m = -2 \rightarrow m = 1$ $\gamma = -\delta \rightarrow n = -\delta$	5

$$am - bn = \frac{1}{2} \times \frac{E}{1} - \left(-\frac{1}{2} \times \frac{-\delta}{1} \right) = -\frac{1}{2} \frac{1}{E}$$

$D_g = \mathbb{R} - \{a\}$ و $g(a) = c$ و $f(a) = \frac{ba+r}{\Lambda a+b}$ من أجل $\frac{a}{c}$ من أجل $\frac{a}{c}$

$$c = \frac{ba+r}{\Lambda a+b} \Rightarrow ba+r = \Lambda ca + cb \Rightarrow cb = r \Rightarrow b = \Lambda c$$

$$-\varepsilon, \varepsilon$$

$$c = \frac{b}{\Lambda} \rightarrow bc = \left(\frac{b}{\Lambda}\right)b = \frac{b^2}{\Lambda} = r \rightarrow b = \pm \varepsilon \rightarrow c = \pm \frac{1}{r}$$

if $b = \varepsilon \rightarrow \frac{\varepsilon a+r}{\Lambda a+\varepsilon} = \frac{1}{r} \rightarrow \frac{a}{c} = \frac{-\varepsilon \Lambda \varepsilon}{1} = -\varepsilon$ | if $b = -\varepsilon \rightarrow \frac{-\varepsilon a+r}{\Lambda a-\varepsilon} = \frac{1}{r} \rightarrow \frac{a}{c} = \varepsilon$

f, g $g = \{(r, \varepsilon)(\varepsilon, \varepsilon)(-1, \varepsilon)(0, 0)\}$ و $f = \{(r, 1)(\varepsilon, 1)(-1, \varepsilon)(0, 0)\}$

$$f = \{(r, 1)(\varepsilon, 1)(-1, \varepsilon)(0, 0)\}$$

$$\frac{fg}{f+g} = \frac{\{(r, 1)(\varepsilon, 1)(-1, \varepsilon)(0, 0)\}}{\{(-1, -r)(r, 1)(\varepsilon, \varepsilon)\}} = \{(r, 1)(\varepsilon, 1)(-1, \varepsilon)\}$$

$$R_{\frac{fg}{f+g}} = \{\varepsilon, 1, r\}$$

$a = -1$ و $g = \{(r, -1)(-c, 1)(a+cb, d)\}$ و $f = \{(r, a)(-c, r_a-r_b)(c, d)(r, d)\}$

$$ra - rb = 1 \Rightarrow -r - rb = 1 \Rightarrow b = -r$$

$$d = -1 = a$$

$$a - rb = c \Rightarrow -1 + r = -r \Rightarrow c = d$$

$$d + c = -1 - d = \varepsilon$$

$a+b$ من أجل $g(a) = \{(a, b)\}$ و $f(a) = \sqrt{-a^2 + a - m}$

$$\Rightarrow -(a^2 - a + m) \geq 0 \xrightarrow{\text{نضرب في } -1} -a^2 + a - \frac{1}{\varepsilon} \geq 0$$

$$D_f = \left\{\frac{1}{r}\right\}$$

$$b = \sqrt{-\frac{1}{\varepsilon} + \frac{1}{r} - \frac{1}{\varepsilon}} = 0$$

$$a + b = \frac{1}{r} + 0 = \frac{1}{r}$$

$$\xrightarrow{\text{نضرب في } -1} a^2 - a + \frac{1}{\varepsilon} \leq 0$$

$$(a - \frac{1}{r})^2 \leq 0 \rightarrow a = \frac{1}{r} \rightarrow a = \frac{1}{r}$$

$f(a) = \frac{ra+a}{(a+\frac{a}{r})(a-c)} \rightarrow D_f = \mathbb{R} - \{c, \frac{a}{r}\}$ و $g(a) = \frac{r}{a-c}$ و $f(a) = \frac{ra+a}{ra+ra+b}$

$$D_f = D_g = \mathbb{R} - \{c\} \Rightarrow c = \frac{a}{r} \rightarrow (ra+a)(a-c) = ra^2 + 1ra + b$$

$$ra^2 + (a - rc)a - ac = ra^2 + 1ra + b \rightarrow a - rc = 1r \rightarrow a = 1r + rc$$

$$-ac = rb \rightarrow b = \frac{-ac}{r} \rightarrow \frac{-rc^2 - 1rc}{r} \rightarrow b = c^2 - rc = -rc \neq rc + 1r$$

$$a+b+c = (rc+1r) + (-c^2-rc) + c \Rightarrow 9+9-c = 1r \Rightarrow \varepsilon c = 1r \rightarrow c = -r$$