

تکلیف انوری - دهم 3

(سؤال 1)

الف)  $f(x) = \sqrt{x|x|}$ ,  $g(x) = x \rightarrow D_g = \mathbb{R}$

$x|x| > 0 \rightarrow D_f = [0, +\infty)$

→ مساوی نیستند

ب)  $f(x) = \frac{(x+3)(x+1)+x+7}{x^2+5x+6}$ ,  $g(x) = \frac{1}{x+2}$

$x^2+5x+6 = (x+2)(x+3)$

$D_f = \mathbb{R}$

$D_g = \mathbb{R}$

→ مساوی هستند

ج)  $f(x) = \frac{x \sin x - y \sin x}{y \sin x - x}$ ,  $g(x) = x \sin x$

$D_f = \mathbb{R}$

$D_g = \mathbb{R}$

→  $f(x) \neq g(x) \Rightarrow$  مساوی نیستند

د)  $f(x) = \frac{x}{|x|}$ ,  $g(x) = \frac{|x|}{x} \Rightarrow x \neq 0 \rightarrow D_f = D_g = \mathbb{R} - \{0\} \Rightarrow$  مساوی هستند

(سؤال 2)

الف)  $f(x) = \left\lfloor \frac{x^2}{x^2+1} \right\rfloor$ ,  $g(x) = \left\lfloor x - [x] \right\rfloor$

$D_f = \mathbb{R}$

$D_g = \mathbb{R}$

→ مساوی هستند

$\left\lfloor \frac{x^2+1-1}{x^2+1} \right\rfloor = \left\lfloor 1 - \frac{1}{x^2+1} \right\rfloor = 0$

ب)  $f(x) = \frac{1}{\{x\}}$ ,  $g(x) = \frac{1}{x - [x]}$   $D_f \neq D_g \Rightarrow$  مساوی نیستند

ج)  $f(x) = \frac{1}{\sqrt{x-|x|}}$ ,  $g(x) = \frac{1}{\sqrt{|x|-x}}$

→ برابر نیستند

$x-|x| > 0$

$|x| < x \Rightarrow D_f = \emptyset$

$\begin{matrix} + & x \\ - & x \end{matrix} \Rightarrow D_g = (-\infty, 0)$

د)  $f(x) = \begin{cases} \frac{x^2-x}{x-1} & ; x \neq 1 \\ 2 & ; x = 1 \end{cases}$ ,  $g(x) = x^2 + x$

$D_f = \mathbb{R}$

$D_g = \mathbb{R}$

→ مساوی هستند

$$f(x) + g(x) = x^r + x + 1$$

سؤال 3:

$$f(x) - g(x) = x^r - x + 1$$

$$r f(x) = r x^r + r \rightarrow r f(x) = r(x^r + 1) = f(x) = x^r + 1 \rightarrow g(x) = x$$

$$f'(x) - g'(x) = x^{r-1} + r - x^r = x^{r-1} + 1$$

$$f(x) = x - \sqrt{x^r - r}$$

$$(f \times g)$$

سؤال 4:

$$g(x) = x + \sqrt{x^r - r} \rightarrow (x - \sqrt{x^r - r})(x + \sqrt{x^r - r}) = x^r - x^r + r = r$$

$$D_f = D_g = (-\infty, -r] \cup [r, +\infty)$$

$$f(x) = \frac{ax + r}{x^r - mx + n} = g(x) = \frac{x - b}{r x^r - r x - \alpha}$$

سؤال 5:  $am - bn = ?$

$$g(x) = r x^r - r x - \alpha \neq 0 \rightarrow (r x - \alpha)(x + 1) \neq 0 \rightarrow x \neq \frac{\alpha}{r} \rightarrow D_g = \mathbb{R} - \left\{ \frac{\alpha}{r}, -1 \right\}$$

$$f(x) = (x+1)(x - \frac{\alpha}{r}) = x^2 - \frac{\alpha}{r}x - \frac{\alpha}{r} \rightarrow m = \frac{\alpha}{r}, n = -\frac{\alpha}{r}$$

$$\frac{ax + r}{x^r - \frac{\alpha}{r}x - \frac{\alpha}{r}}$$

$$\frac{x - b}{r}$$

$$\rightarrow rax + r = x - b \xrightarrow{x=0} r = -b \rightarrow b = -r$$

$$f(x) = \frac{bx + r}{\lambda x + b}$$

$$\frac{ax - bm}{\lambda x - \lambda a} \xrightarrow{x=0} \frac{r}{-\lambda a} = c \rightarrow c = \frac{-r}{\lambda a} \quad \frac{1}{\lambda} = \frac{1}{r}$$

$$x = 1 = r\alpha + \alpha$$

$$b = \frac{1}{r}$$

$$\frac{ab}{c} = \frac{1}{c}$$

$$g(x) = c \rightarrow D_g = \mathbb{R} - a$$

$$D_f = \mathbb{R} - \left\{ \frac{-b}{\lambda} \right\} \rightarrow D_f = D_g \rightarrow a = \frac{b}{\lambda} \rightarrow b = -\lambda a = \begin{cases} -r \\ r \end{cases}$$

$$x = 1 \quad \frac{-\lambda a + r}{\lambda - \lambda a} = \frac{-1}{\lambda a} = c$$

$$\lambda a - \lambda = -r\lambda a + \lambda a \rightarrow a^r = \frac{1}{r} < a = \frac{1}{r}$$

$$\textcircled{1} \frac{1}{r} \frac{\lambda - \epsilon}{r} = \epsilon$$

$$\textcircled{2} \frac{1}{r} \frac{\lambda + \epsilon}{r} = -\epsilon$$

$$\Rightarrow \frac{ab}{c} = \pm \epsilon$$

$$rf - 1 = \{(-1, r)(r, v)(r, -\alpha)(0, 0)\}$$

$$g = \{(r, f)(r, v)(-1, -f)(\alpha, 0)\}$$

$$rf - 1 = w \rightarrow rf = f \rightarrow f = r$$

$$rf - 1 = v \rightarrow f = f$$

$$rf - 1 = -\alpha \rightarrow f = -r$$

$$rf - 1 = 0 \rightarrow f = \frac{1}{r}$$

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

$$\frac{rg}{f+g} = \{(r, 1)(1, f)(r, r)\} \rightarrow \{1, f, r\}$$

$$\frac{rg}{f+g} \text{ بر } \textcircled{3} \text{ سؤال 5}$$

سؤال 1:  $d + c$

$$f = \{(r, a) (-r, r-a-b) (c, a) (r, d)\}$$

$$g = \{(r, -1) (-r, 1) (a' - r, b, a)\}$$

$$a = -1$$

$$d = -1$$

$$-r - rb = 1 \rightarrow -rb = r \rightarrow \boxed{b = -r}$$

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

$$-1 + r = c \rightarrow \boxed{c = a}$$

سؤال 9:  $a + b$

$$f(x) = \sqrt{-x^2 + x - m} \rightarrow -(x^2 - x + m) > 0 \rightarrow \Delta \leq 0 \rightarrow \text{مربع} = -(x-a)^2$$

$$D_f = D_g \Rightarrow \{a\}$$

$$g(x) = \{(a, b)\}$$

$$-x^2 + rx - a' - a' = -x^2 + x - m \rightarrow ra = 1 \rightarrow \boxed{a = \frac{1}{r}} \quad \boxed{b = 0} \rightarrow \boxed{a + b = \frac{1}{r}}$$

سؤال 10:  $a + b + c$

$$f(x) = \frac{rx + a}{x^2 + rx + b}$$

$$g(x) = \frac{r}{x - c}$$

$$\rightarrow \frac{rx + a}{x^2 + rx + b} = \frac{r}{x - c} \rightarrow \frac{r(x + \frac{a}{r})}{(x + r)^2} = \frac{r}{x + r}$$

$$\boxed{b = 9}$$

$$\boxed{a = 7}$$

$$\boxed{c = -3}$$

$$\rightarrow 9 + 7 - 3 = 13$$