۸- $a=-۱$ $\quad -۲-۲b=۱$ $\quad -۲b=۴$ $\quad b=-۲$

$-۱+۶=c=۵$ $\quad \alpha=a=-۱$ $\quad a+b=-۱+(-۲)=-۳$

۹- $f(x)=g(x)$ $\quad (a,b)$ [illegible] $\quad -x^۲+x-m=0$

[illegible] جواب دارد $\quad \Delta=0 \Rightarrow b^۲-۴ac=۱-۴(-۱)(-m)$

$۱-۴m=0$ $\quad \frac{۱}{۴}=\frac{۴m}{۴}$ $\quad \sqrt{-(x^۲-x+\frac{۱}{۴})}=\sqrt{\underbrace{-(x-\frac{۱}{۲})^۲}_{\text{نامنفی}}}$ $\quad x-\frac{۱}{۲}=0$ $\quad x=\frac{۱}{۲}=a$

$a+b=\frac{۱}{۲}$

$D_g=\mathbb{R}-\{c\}$

۱۰- $\frac{۳۶}{۴}=\frac{۴b}{۴}$, $b=۹$ $\quad \Delta=0$ $\quad b^۲-۴ac=۳۶-۴b=0$ $\rightarrow$ $x^۲+۶x+b$ مخرج [illegible] ریشه مضاعف دارد

$(x^۲+۶x+۹)\to(x+۳)^۲$ $\quad c=-۳$ $\quad x=0$ $\quad g(0)=\frac{۲}{-۳}=f(0)=\frac{a}{۹}$

$a=۶$ $\quad a+b+c=۶+۹+(-۳)=۱۲$

$2x^2 - 2x - 5 = x^2 - 3x - 10$ $(x - \frac{5}{2})(x+1) = x^2 - mx - n - 5$

$(x-5)(x+2) \neq 0$ $x^2 - \frac{1}{2}x - \frac{5}{2}$

$x = \frac{5}{2}, x = \frac{-2}{2} = -1$

$m = +\frac{1}{2}$ $n = \frac{-5}{2}$

$D_g = \mathbb{R} - \{\frac{5}{2}, -1\} = D_f$ $am - bn = (\frac{-1}{2} \times \frac{1}{2}) - (-\frac{\cancel{8}}{\cancel{2}} \times 4) = \frac{9}{4}$ $\frac{5}{4}$

$x = 0$ $g(0) = \frac{+b}{+5}$ $f(0) = \frac{2}{\frac{-5}{2}} \rightarrow 2 \times \frac{2}{-5} = \frac{4}{-5}$ $b = 4$

$x = 1$ $\frac{1-b}{-6} \rightarrow \frac{5}{-6} = \frac{a+2}{1-\frac{6}{2}}$ $\frac{5}{-6} = \frac{a+2}{-2}$ $\rightarrow \frac{a+2}{-2} = \frac{5}{-6}$ $a+4 = \frac{-10}{-18}$

$a = \frac{5}{3} - 2 = \frac{-1}{3}$

$8x + b \neq 0$ $8x \neq -b$ $a = \frac{-b}{8}$

$g(0) = c$ $f(0) = \frac{2}{b} \rightarrow c = \frac{2}{b} \rightarrow bc = 2$ $c = \frac{b}{8} = \frac{2}{b}$, $b^2 = 16$ $b = \pm 4$

$\frac{bx+2}{8x+b} = c$

$c8x + \cancel{bc} = bx + 2$, $8xc = bx$ $c = \frac{b}{8}$

$\frac{ab}{c}$ $\frac{\frac{-b}{8} \cdot b}{\frac{b}{8}} = -b \rightarrow \pm 4$

$f = \{(-1, 4), (2, 8), (3, -4)\}$ $\frac{f}{f \cdot g} = \{(2, \frac{8}{4+4}), (3, \frac{12}{4}), (-1, \frac{-7}{-2})\}$

$f \cdot g = \{-1, 2$, $(2, 4), (3, -2)\}$

$g = \{(2, 8), (3, 12), (-1, -8)\}$ $R = \{1, 2, 4\}$

فاطمه موسوی

۱- الف) $D_f = [0, +\infty)$ $\quad D_g = \mathbb{R}$ $\quad$ برابر ✗

ب) $x^2 + 4x + 3 + x + 4 = \dfrac{x^2 + 5x + 7}{\cancel{x^2+5x+7}} = 1$ $\quad$ برابر ✓

$\Delta = 25 - 4 \times 7 = \ominus$ $\quad$ $x^2 + 5x + 7 \leftarrow$ ریشه ندارد

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ج) $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{3}, 2k\pi + \frac{2\pi}{3}\}$ $\quad D_g = \mathbb{R}$ $\quad$ برابر ✓

$\sin x \neq \frac{2}{2}$ (غلط) $\rightarrow D_f = \mathbb{R}$

د) $D_f = \mathbb{R} - \{0\}$ $\quad D_g = \mathbb{R} - \{0\}$ $\quad$ ضابطه‌ها یکسان است برابر ✓

۲-

الف) $\dfrac{x^2+1-1}{x^2+1} \rightarrow \left[\dfrac{x^2+1}{x^2+1} - \dfrac{1}{x^2+1}\right] = 0$ $\quad$ $[x - [x]] = 0$ برابر ✓

ب) $D_f = \mathbb{R} - [0, \frac{1}{2})$ $\quad D_g = \mathbb{R} - [0, 1)$ $\quad$ برابر ✗

ج) $D_f = \emptyset$ $\quad D_g = (-\infty, 0)$ $\quad$ برابر ✗

د) $\dfrac{x(x^2-1)}{x-1} = \dfrac{x\cancel{(x-1)}(x+1)}{\cancel{x-1}} = x^2 + x$ $\quad$ برابر ✓

۳-

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

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

$2f(x) = 2x^2 + 2$

$f(x) = x^2 + 1$

$f^2(x) - g^2(x) =$

$(x^2+1)^2 - x^2 = x^4 + 1 + 2x^2 - x^2 = x^4 + x^2 + 1$

۴-

$(x - \sqrt{x^2-4})(x + \sqrt{x^2-4}) = x^2 - x^2 + 4 = 4$

$f \times g \begin{cases} 4 & ; (-\infty, -2] \cup [2, \infty) \\ \text{تعریف نشده} & ; (-2, 2) \end{cases}$

$x \geq 2$ $\quad$ $x \leq -2$

ASTAR