

۱) $f(x) = \sqrt{x|x|}$, $g(x) = x$ $D_f = D_g = \mathbb{R} \Rightarrow f(x) \neq g(x)$

۲) $f(x) = \frac{(x+3)(x+1)}{x^2 + 3x + 2}$, $g(x) = 1$ $D_f = D_g = \mathbb{R} \Rightarrow f(x) = g(x)$

۳) $f(x) = \frac{x \sin x - x \sin x}{x \sin x - x}$, $g(x) = x \sin x$ $D_f = D_g = \mathbb{R} \Rightarrow f(x) = g(x)$

۴) $f(x) = \frac{x}{|x|}$, $g(x) = \frac{|x|}{x}$ $D_f = D_g = \mathbb{R} \Rightarrow f(x) = g(x)$

۵) $f(x) = \left[\frac{x^2}{x^2+1} \right]$, $g(x) = [x - [x]]$ $D_f = D_g = \mathbb{R} \Rightarrow f(x) = g(x)$

۶) $f(x) = \frac{1}{[x]}$, $g(x) = \frac{1}{x}$ $D_f = \mathbb{R} - [0, 1)$ $D_g = \mathbb{R} - [0, 1)$ $\Rightarrow f(x) \neq g(x)$

۷) $f(x) = \frac{1}{\sqrt{x-|x|}}$, $g(x) = \frac{1}{\sqrt{|x|-x}}$ $D_f = D_g = \mathbb{R} \Rightarrow f(x) = g(x)$

۸) $f(x) = \frac{x^2 - x}{x-1}$, $g(x) = x^2 - x$ $D_f = D_g = \mathbb{R} \Rightarrow f(x) = g(x)$

۹) $f(x) + g(x) = x^2 + x + 1$ $\Rightarrow 2g(x) = x^2 + x + 1 - x^2 - x - 1 = 0 \Rightarrow g(x) = 0$

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

۱۱) $f(x) = x - \sqrt{x^2}$, $g(x) = x + \sqrt{x^2}$ $D_f = D_g = (-\infty, -1] \cup [1, +\infty)$

۱۲) $f(x) \times g(x) = x^2 - (x^2 - x) = x$

۱۳) $f(x) = \frac{x^2 + x}{x^2 - x + 1}$, $g(x) = \frac{x - b}{x^2 - x + 1}$ $\Rightarrow \frac{x^2 + x}{x^2 - x + 1} = \frac{x - b}{x^2 - x + 1}$

۱۴) $K(x^2 + x) = x - b$ $\Rightarrow Kx^2 + Kx = x - b$

۱۵) $Kx^2 + Kx = x - b$

۱۶) $\Rightarrow Kx^2 + Kx = x - b$

۱۷) $\Rightarrow b = -Kx = -\frac{1}{x}$

۱۸) $\Rightarrow Kx^2 + Kx = x - b$

۱۹) $m = \frac{x}{x} \quad n = \frac{0}{x} \Rightarrow am - bn = \frac{x}{x} - 0 = 1$

$$f(n) = \frac{b(n+1)^2}{n^2+n+6} = g(n) = c \Rightarrow D_f = D_g = \mathbb{R} - a$$

$\frac{b(n+1)^2}{n^2+n+6} = c \Rightarrow b(n+1)^2 = c(n^2+n+6)$
 $\Rightarrow b(n^2+2n+1) = c(n^2+n+6)$
 $\Rightarrow bn^2 + 2bn + b = cn^2 + cn + 6c$
 $\Rightarrow (b-c)n^2 + (2b-c)n + (b-6c) = 0$
 $\Rightarrow \begin{cases} b-c=0 \\ 2b-c=0 \\ b-6c=0 \end{cases} \Rightarrow \begin{cases} b=c \\ 2b=c \\ b=6c \end{cases} \Rightarrow \begin{cases} b=c \\ 2c=c \\ c=6c \end{cases} \Rightarrow \begin{cases} b=c \\ c=0 \\ c=0 \end{cases}$
 $\Rightarrow a = -\frac{1}{c}$
 $\Rightarrow a = \frac{1}{c}$
 $\Rightarrow c = -\frac{1}{a}$
 $\Rightarrow \frac{ab}{c} = \frac{a \cdot \frac{1}{a}}{-\frac{1}{a}} = \frac{1}{-\frac{1}{a}} = -a$
 $\Rightarrow \frac{ab}{c} = -a$

$f \neq g \Rightarrow f = \{(-1, 1), (1, 1), (1, -1), (0, 1)\}$
 $g = \{(1, 1), (1, -1), (-1, 1), (0, 1)\}$
 $\Rightarrow f = \{(-1, 1), (1, 1), (1, -1), (0, 1)\}$
 $g = \{(1, 1), (1, -1), (1, 1), (0, 0)\}$
 $f+g = \{(-1, 1), (1, 1), (1, 1)\}$
 $\Rightarrow R_{f+g} = \{1, 1, 1\}$
 $f = \{(1, a), (1, a-1), (1, a), (1, a)\}$
 $g = \{(1, -1), (-1, 1), (a-1, a), (1, a)\}$

$\Rightarrow a = d = -1$
 $\Rightarrow a-1 = 1 \Rightarrow -1-1 = 1 \Rightarrow -2 = 1 \Rightarrow b = -1$
 $\Rightarrow a-1 = 1 \Rightarrow -1-1 = 1 \Rightarrow -2 = 1 \Rightarrow d = -1$

$f(n) = \sqrt{-n^2 + n - m} = g(n) = \frac{1}{n} \Rightarrow a = m$
 $\Rightarrow \sqrt{-n^2 + n - m} = \frac{1}{n}$
 $\Rightarrow -n^2 + n - m = \frac{1}{n^2}$
 $\Rightarrow -n^4 + n^3 - mn^2 = 1$
 $\Rightarrow -n^4 + n^3 - mn^2 - 1 = 0$
 $\Rightarrow -n^4 + n^3 - mn^2 - 1 = 0$
 $\Rightarrow -n^4 + n^3 - mn^2 - 1 = 0$

$f(n) = \frac{n^2+a}{n^2+n+6} = g(n) = \frac{1}{n-c} \Rightarrow f(n) = \frac{n^2+a}{(n+\frac{a}{c})(n-c)}$
 $\Rightarrow D_f = \mathbb{R} - \{-\frac{a}{c}, c\}$

$D_f = \mathbb{R} - \{-\frac{a}{c}, c\}$
 $\Rightarrow \frac{n^2+a}{(n+\frac{a}{c})(n-c)} = \frac{1}{n-c}$
 $\Rightarrow n^2+a = (n+\frac{a}{c})(n-c)$
 $\Rightarrow n^2+a = n^2 - cn + \frac{a}{c}n - ac$
 $\Rightarrow a = -cn + \frac{a}{c}n - ac$
 $\Rightarrow a = -cn + \frac{a}{c}n - ac$
 $\Rightarrow a = -cn + \frac{a}{c}n - ac$
 $\Rightarrow a = -cn + \frac{a}{c}n - ac$