

الف) $f(x) = \sqrt{x|x|}$, $g(x) = x$ $DF \rightarrow x|x| > 0$ $\odot \checkmark + x + = +$ $DF \neq Dg$
 $\ominus x - x + = -$ $f(x) \neq g(x)$ $\checkmark$

ب) $f(x) = \frac{(x+1)(x+1)}{x^2+5x+6}$, $g(x) = 1$ $DF = \{0, +\infty\}$ $\odot \checkmark$
 $\Delta = b^2 - 4ac = 25 - 24 = 1$ $x^2 + 5x + 6 = (x+2)(x+3)$ $f(x) = \frac{(x+1)^2}{(x+2)(x+3)}$ $g(x) = 1$ $DF = \{0, +\infty\}$ $Dg = \{0, +\infty\}$ $f(x) \neq g(x)$ $\checkmark$

ج) $f(x) = f \sin^2 x - 4 \sin x$, $g(x) = 2 \sin x$, $f(x) = \frac{f \sin^2 x - 4 \sin x}{2 \sin x}$ $g(x) = 2 \sin x$ $DF = Dg$ $f(x) = g(x)$ $\checkmark$

د) $f(x) = \frac{x}{|x|}$, $g(x) = \frac{|x|}{x}$ $f(x) = \frac{x}{|x|}$ $g(x) = \frac{|x|}{x}$ $DF = Dg$ $f(x) = g(x)$ $\checkmark$

ه) $f(x) = \frac{x^2}{x^2+1}$, $g(x) = \frac{x}{x^2+1}$ $f(x) = \frac{x^2}{x^2+1}$ $g(x) = \frac{x}{x^2+1}$ $DF = Dg$ $f(x) \neq g(x)$ $\checkmark$

و) $f(x) = \frac{1}{x}$, $g(x) = \frac{1}{x^2}$ $f(x) = \frac{1}{x}$ $g(x) = \frac{1}{x^2}$ $DF = Dg$ $f(x) \neq g(x)$ $\checkmark$

ز) $f(x) = \frac{1}{\sqrt{x-1}}$, $g(x) = \frac{1}{\sqrt{x+1}}$ $f(x) = \frac{1}{\sqrt{x-1}}$ $g(x) = \frac{1}{\sqrt{x+1}}$ $DF = Dg$ $f(x) \neq g(x)$ $\checkmark$

ح) $f(x) = \begin{cases} \frac{x^2-x}{x-1} & x \neq 1 \\ 2 & x = 1 \end{cases}$, $g(x) = x^2+x$ $f(x) = \frac{x^2-x}{x-1}$ $g(x) = x^2+x$ $DF = Dg$ $f(x) \neq g(x)$ $\checkmark$

ط) $f(x) = x^2+x+1$, $g(x) = x^2+x$ $f(x) = x^2+x+1$ $g(x) = x^2+x$ $DF = Dg$ $f(x) \neq g(x)$ $\checkmark$

ث) $f(x) = x^2+x+1$, $g(x) = x^2+x$ $f(x) = x^2+x+1$ $g(x) = x^2+x$ $DF = Dg$ $f(x) \neq g(x)$ $\checkmark$

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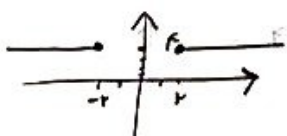
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$$f(x) = \frac{bx+r}{ax+b} \Rightarrow y = \frac{bx+r}{ax+b} \Rightarrow ax+b \neq 0 \Rightarrow x \neq -\frac{b}{a} \Rightarrow -\frac{b}{a} = a$$

$$\Rightarrow \frac{ab}{c} \Rightarrow \frac{-\frac{1}{r} \times f}{-\frac{1}{r}} = \frac{-f}{-1} = f$$

$$g(x) = c$$

$$ng = R \cdot \{a\}$$

$$\frac{ab}{c} = \frac{-\frac{b}{a} \times b}{c} = \frac{-b^2}{ac}$$

$$\Rightarrow \frac{ab}{c} \Rightarrow \frac{\frac{1}{r} \times f}{\frac{1}{r}} = \frac{f}{1} = f$$

$$\frac{bx+r}{ax+b} \Rightarrow \frac{ax}{bx} = \frac{b}{r} \Rightarrow b^2 = 1r \Rightarrow b = \pm r$$

$$b = f \rightarrow \frac{-f}{a} = a \cdot \frac{-1}{r} \Rightarrow \frac{-fx+r}{ax+f} = c \Rightarrow \frac{r(-r+1)}{-f(-r+1)} = \frac{1}{r}$$

$$r^2 - 1 = \{(1, 3), (2, 4), (3, 5), (0, 0)\} \rightarrow F = \{(1, 2), (2, 3), (3, 4), (0, 1)\}$$

$$g = \{(1, 1), (2, 2), (3, 3), (0, 0)\} \rightarrow r_2 = \{(2, 1), (3, 2), (1, 3), (0, 0)\}$$

$$\frac{r_2}{F+g} \Rightarrow \left\{ \left(-1, \frac{-1}{-r} \right), \left(2, \frac{1}{a} \right), \left(3, \frac{1r}{r} \right) \right\} \Rightarrow \text{Circ. } \{f, 1, 3\}$$

Y

$$f = \{(1, a), (-3, 3a-2b), (c, \omega), (1, d)\}$$

$$-1 + \omega = [f] = d + c$$

$$g = \{(1, -1), (-3, 1), (a-3b, \omega)\}$$

$$\begin{aligned} d = a = -1 \\ 3a - 2b = 1 \\ -3 - 2b = 1 \\ -3 - 1 = 2b \\ -\frac{f}{b} = \frac{r}{b} \\ b = -r \end{aligned}$$

$$\begin{aligned} a - 3b = c \\ -1 - 2(-r) = c \\ -1 + 2r = c \\ \underline{0 = c} \end{aligned}$$



A

$$f(x) = \sqrt{-x^2 + x - m} \Rightarrow \sqrt{-(x^2 - x + m)} = f(x)$$

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

$$\Delta = 0 \rightarrow \text{تقاطع در دو نقطه}$$

چون فرض کنیم این دو خط به ازای حالات مختلف موازی، متقاطع، یا منطبق باشند.

$$\begin{aligned} b^2 - 4ac = 0 \\ 1 - 4m = 0 \\ m = \frac{1}{4} \end{aligned}$$

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



9

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

$$\Rightarrow \frac{rx+a}{x^2+rx+b} = \frac{g(x)}{x \cdot c}$$

$$\Rightarrow rx^2 + rx + rb = rx^2 - rx + ax - ac$$

$$rx^2 + rx + rb = rx^2 + x(-r + a) - ac$$

$$rx = x(-r + a) \Rightarrow -r = -r + a \Rightarrow a = 1r + r = 2r$$

$$rb = -ac \Rightarrow b = \frac{-ac}{r}$$

$$\frac{a}{r} = 2 \Rightarrow a = 2r$$

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

$$(x + \frac{a}{r}) = (x+r)$$

$$\frac{a}{r} = r \Rightarrow a = r^2$$

$$a + b + c = 9 + r - 3 = 6$$

1.