

باران مرادی

$$x f(x) \geq 0 \quad 1) f = [-5, 0] \cup [2, 5]$$

①

$$\frac{-x}{f(x)} \geq 0 \quad 1) f = [-3, 2] - \{0\} \rightarrow \text{عدد صحیح}$$

②

$$x=2 \rightarrow f(2) - 2f(2) = 2 - 4 + 2$$

$$-f(2) = 2 \rightarrow f(2) = -2$$

$$f(-2) - (-2) = 2 + 4 + 2 \quad \boxed{f(2) = 10}$$

$$f(-2) = 2 + 4 + 2 = 10$$

$$f(1) = 2 + 3 = 5 \rightarrow f(5) = 2$$

$$v + 2 = 9$$

$$f(5) = 5 - \sqrt{5+2} = 5 - 3 = 2 \rightarrow f(2) = 2 + 3 = 5$$

$$x=0 \rightarrow f(x) = 2$$

$$x=1 \quad \frac{f(0)}{2} - f(1) = \frac{2}{2} - f(1) = 1 - f(1) = 4$$

$$f(1) = -4$$

$$\boxed{a-b = -1}$$

$$f(1) = a - b + 2 = -4$$

$$f(1) = a - b = -1$$

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$$\frac{x^2 + 5x + 6}{x^2 + 5x + 7} = \frac{(\sqrt{3}-2)^2 + 5(\sqrt{3}-2) + 6}{(\sqrt{3}-2)^2 + 5(\sqrt{3}-2) + 7} = \frac{3+4-4\sqrt{3}+5\sqrt{3}-1+6}{3+4-4\sqrt{3}+5\sqrt{3}-1+7} = \frac{6}{9} = \frac{2}{3}$$

$$\frac{x^2+1}{x^2} = \frac{x^2}{x^2} + \frac{1}{x^2} = x^2 + \frac{1}{x^2} + 2 - 2 = \left(x - \frac{1}{x}\right)^2 + 2 \Rightarrow (-3)^2 + 2 = 11$$

الف) $1) g(x) = 9 - x^2 \geq 0$
 $x^2 \leq 9$
 $\begin{cases} x \geq -3 \\ x \leq 3 \end{cases}$

$$\frac{f}{g} = \left\{ (2, 0) \left(1, -\frac{\sqrt{2}}{2}\right) \left(0, \frac{2}{3}\right) \right\}$$

$\downarrow$ $\downarrow$ $\downarrow$
 $\frac{0}{9-2^2}$ $\frac{-\sqrt{2}}{9-1}$ $\frac{2}{9-0} = \frac{2}{9}$
 $\times \sqrt{2} \rightarrow \frac{-2}{9} \times \frac{2}{9} = \frac{-4}{81} = -\sqrt{2}$

ب) $\frac{g}{f} = \left\{ \left(\frac{0}{2-4}\right) \left(1, -\frac{\sqrt{2}}{2}\right) \left(0, \frac{2}{3}\right) \right\}$

$\downarrow$ $\downarrow$ $\downarrow$
 $\frac{0}{2-4}$ $\frac{\sqrt{2}}{2-1}$ $\frac{2}{3} = 1/5$

الف) $2f(x) = \{(2, 2) (3, 1) (-5, 4) (1, -4)\}$

ب) $f(x) + 1 = \{(2, 3) (3, 5) (-5, 3) (1, -1)\}$

ج) $3f(x) + 1 = \{(2, 4) (3, 49) (-5, 13) (1, 13)\}$

$\frac{3(2)+1}{3(2)+1}$ $\frac{3(3)+1}{3(3)+1}$ $\frac{3(-5)+1}{3(-5)+1}$ $\frac{3(1)+1}{3(1)+1}$

د) $f(2x) = \left\{ \left(1, 1\right) \left(\frac{3}{2}, 4\right) \left(-\frac{5}{2}, 2\right) \left(\frac{1}{2}, -2\right) \right\}$

الف) $f-g = \left\{ \left(1, 4\right) \left(2, 2\right) \left(3, 2\right) \right\}$

$\downarrow$ $\downarrow$ $\downarrow$
 $4-0$ $2-1$ $2-1$

ب) $\frac{2f}{g} = \left\{ \left(\frac{2}{1-4}\right) (2, 4) (3, -2) \right\}$

$2f = \{(2, 4) (7, 4) (1, 2) (3, 2) (5, 4)\}$