

الف) $\frac{x-1}{x} - \frac{x}{x-1} > 0 \rightarrow \frac{(x-1)^2 - x^2}{x(x-1)} = \frac{x^2 - 2x + 1 - x^2}{x(x-1)} = \frac{-2x + 1}{x(x-1)}$

ب) $\frac{1}{x+1} - \frac{2}{x} > 0 \rightarrow \frac{-x-2}{x(x+1)} = \frac{-x-2}{x(x+1)}$
 $\frac{2}{x+1} + \frac{1}{x+2} > 0 \rightarrow \frac{2x+2+x+1}{(x+1)(x+2)} = \frac{3x+3}{(x+1)(x+2)} = \frac{3(x+1)}{(x+1)(x+2)} = \frac{3}{x+2} > 0$
 $D_f = (-\infty, -2) \cup [\frac{1}{3}, \infty)$
 $D_g = R - \{-2, -\frac{5}{2}, -1, 5, 0\}$

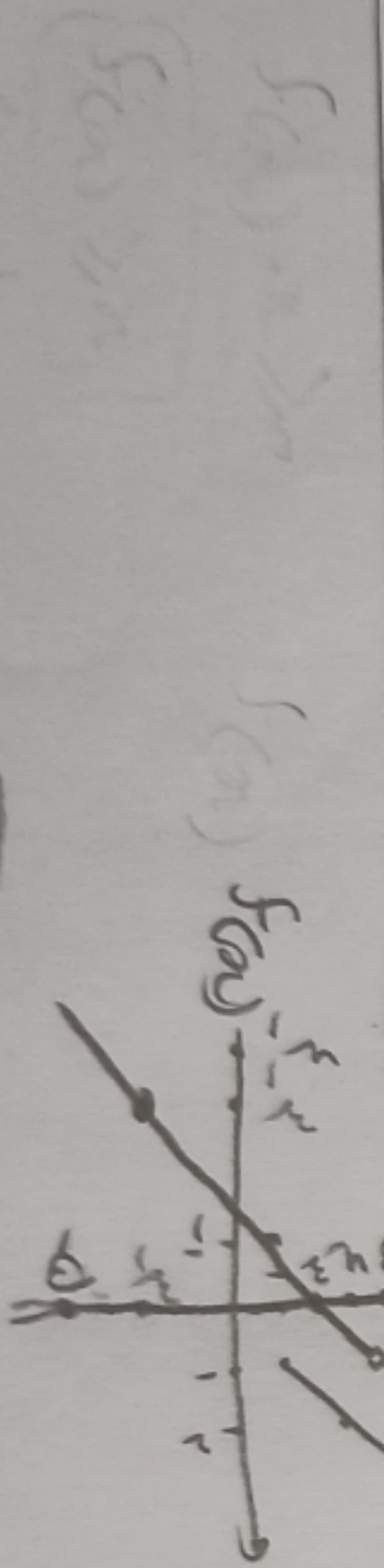
د) $\left(\frac{1}{x}\right)^{x-1} (x^2 - x^2)^{x-1} > 0$
 $x^2 - x^2 = 0 \rightarrow x^2 = x^2 \rightarrow x = 0$
 $x = -1 \rightarrow \left(\frac{1}{x}\right)^{x-1} = 1 \rightarrow x = -1$
 $D_f = (-\infty, -1) \cup (-1, \infty)$
 $D_g = (-\infty, -1) \cup (-1, \infty)$

ه) $\sqrt{x+1} - \sqrt{x-1} > 0$
 $\sqrt{x+1} > \sqrt{x-1}$
 $x+1 > x-1$
 $2 > 0$
 $D_f = (-\infty, \infty)$
 $D_g = (-\infty, \infty)$

و) $\frac{x^2 - x - 2}{(x-2)(x+1)} > 0$
 $\frac{x^2 - x - 2}{(x-2)(x+1)} = \frac{(x-2)(x+1)}{(x-2)(x+1)} = 1$
 $D_f = (-\infty, -1) \cup (1, \infty)$
 $D_g = (-\infty, -1) \cup (1, \infty)$

ز) $\sqrt{x^2 - 1} > 0$
 $x^2 - 1 > 0$
 $x^2 > 1$
 $x > 1$ or $x < -1$
 $D_f = (-\infty, -1) \cup (1, \infty)$
 $D_g = (-\infty, -1) \cup (1, \infty)$

ح) $\sqrt{x^2 + ax - x^2} > 0$
 $x^2 + ax - x^2 > 0$
 $ax > 0$
 $a > 0$ or $a < 0$
 $D_f = (-\infty, \infty)$
 $D_g = (-\infty, \infty)$



ط) $\sqrt{x^2 + ax - x^2} > 0$
 $x^2 + ax - x^2 > 0$
 $ax > 0$
 $a > 0$ or $a < 0$
 $D_f = (-\infty, \infty)$
 $D_g = (-\infty, \infty)$

$$f(x) = f(x+1) + a \rightarrow f(x) = V(x+1) + f(x) = 2a - f$$

$$f(Va+V) = 2a - f + a$$

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

$$10a = -18$$

$$a = -1.8$$

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$$f(\sqrt{2}-\sqrt{2}) = \sqrt{2-\sqrt{2}} + \frac{1}{\sqrt{2-\sqrt{2}}} + 2 = \sqrt{2-\sqrt{2}} + \sqrt{2+\sqrt{2}} + 2$$

$$f(\sqrt{2}+\sqrt{2}) = \sqrt{2+\sqrt{2}} + \frac{1}{\sqrt{2+\sqrt{2}}} + 2 = \sqrt{2+\sqrt{2}} + \sqrt{2-\sqrt{2}} + 2$$

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

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$$x \rightarrow f(x) - f(-x) = 2x^2 - x \xrightarrow{\times 2} 2f(x) - f(-x) = 4x^2 - 2x$$

$$-x \rightarrow f(-x) - f(x) = 2x^2 + x \xrightarrow{\times 2} 2f(-x) - f(x) = 4x^2 + 2x$$

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

$$f(x) = -2x^2 - \frac{x}{2}$$

$$f(x) = \frac{-4x^2 - x}{2}$$

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$$n=0 \rightarrow (0+1)f(0) - 2 \times 0 f(0+1) = 2m-1$$

$$f(0) - 0 = 2m-1$$

$$f(0) = \frac{2m-1}{2}$$

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$$n=-1 \rightarrow f(-1) + f(-1) = \frac{1+1+1}{-1}$$

$$f(-1) = -1$$

$$f(1) = -9$$

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