

الف)

$$\frac{x-1}{x} - \frac{x}{x-1} \geq 0$$

19, 20

$$\frac{(x-1)^2 - x^2}{x(x-1)} \geq 0$$

$$\frac{(x-1-x)(x-1+x)}{x(x-1)} \geq 0$$

$$\begin{array}{c} 0 \quad \frac{1}{x} \quad 1 \\ + \quad - \quad + \\ \hline \end{array} D_f = (-\infty, 0) \cup [\frac{1}{x}, 1) \quad \checkmark$$

(2)

ب)

$$x \neq -1$$

$$x \neq 0$$

$$x \neq 1$$

$$x \neq -2$$

$$\frac{y}{x-1} + \frac{1}{x+2} \neq 0$$

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

$$x+2 \neq 0$$

$$x \neq -\frac{2}{c}$$

$$D_f = \mathbb{R} - \left\{ 1, 0, -1, -2, -\frac{2}{c} \right\} \quad \checkmark$$

الف)

$$\left(\left(\frac{1}{c} \right)^x - 9 \right) (x^2 - x^2) \geq 0$$

$$\begin{array}{c} -x \quad \frac{2}{c} \\ - \quad + \\ \hline \end{array}$$

$$D_f = [2, \frac{2}{c}] \quad \mathbb{R} - (x, \frac{2}{c})$$

(1, 2)

-2

ب)

$$x \geq 1$$

$$\sqrt[3]{x-1} \geq 0$$

$$\sqrt[3]{x-1} \leq 0$$

$$x-1 \leq 1$$

$$x \leq 2$$

$$D_f = [1, 2] \quad \checkmark$$

$$x^2 - x - 2 > 0$$

$$(x-2)(x+1) > 0$$

$$\begin{array}{c} -1 \quad 2 \\ + \quad - \\ \hline \end{array}$$

$$D_f = (-\infty, -1) \cup (2, +\infty) \quad \checkmark$$

-3

(4)

-4

(2)

-5

(4)

$$x \geq 1: \quad 3x - 2 - x \geq 0$$

$$2x \geq 2$$

$$x \geq 1$$

$$x < 1: \quad 2x + c - x \geq 0$$

$$x \geq -c$$

$$1 > x \geq -c$$

$$D_g = [1, +\infty) \cup [-c, 1) \quad \checkmark$$

$$2(a+1)(v) = 3a - 4 + a$$

$$14a + 14 = 4a - 4$$

$$10a = -18$$

$$a = -1.8$$

(2)

$$2 - \sqrt{c} = \left(\sqrt{\frac{c}{4}} - \sqrt{\frac{1}{4}} \right)^2$$

$$2 + \sqrt{c} = \left(\sqrt{\frac{c}{4}} + \sqrt{\frac{1}{4}} \right)^2$$

$$f(2 - \sqrt{c}) + f(2 + \sqrt{c}) = \sqrt{\frac{c}{4}} - \sqrt{\frac{1}{4}} + \frac{1}{\sqrt{\frac{c}{4}} - \sqrt{\frac{1}{4}}} + 2 + \sqrt{\frac{c}{4}} + \sqrt{\frac{1}{4}} + \frac{1}{\sqrt{\frac{c}{4}} + \sqrt{\frac{1}{4}}} + 2$$

$$= 2\sqrt{\frac{c}{4}} + \frac{\sqrt{\frac{c}{4}} + \sqrt{\frac{1}{4}} + \sqrt{\frac{c}{4}} - \sqrt{\frac{1}{4}}}{\frac{c}{4} - \frac{1}{4}} + 4 + \frac{4\sqrt{\frac{c}{4}}}{2\sqrt{4}} + 4$$

دقت!

روشن پاشید و را
حتماً بچگونگی

$$2f(x) - 3f(-x) = 4x^2 - x$$

$$4f(x) - 9f(-x) = 12x^2 - 2x$$

$$2f(-x) - 3f(x) = 4x^2 + x$$

$$4f(-x) - 9f(x) = 12x^2 + 2x$$

$$-5f(x) = 20x^2 + x$$

$$f(x) = -4x^2 - \frac{x}{5}$$

$$18f(0) = 48 + 18m - 3$$

$$x = -2: 4f(0) = 17 + 2m + 2m - 1$$

$$18f(0) = 48$$

$$x = 0: 2f(0) = 3m - 1$$

$$10f(0) = 15m - 5$$

$$f(0) = \frac{48}{18}$$

$$ax + b + \frac{a}{x} + b = \frac{3x^2 - 12x + c}{x}$$

$$x \neq 0 \Rightarrow ax^2 + 2bx + a = 3x^2 - 12x + c$$

$$a = 3$$

$$b = -6$$

$$f(x) = 3x - 7$$

$$f(-1) = -9$$

-10

9