

$$1) \text{ if } x \geq 1 \rightsquigarrow \sqrt{2x-1-x+1} = \sqrt{x} \rightsquigarrow x \geq 0 \quad \checkmark$$

$$\text{if } x \leq 1 \rightsquigarrow \sqrt{2x+1-x+1} = \sqrt{x+2} \rightsquigarrow x+2 \geq 0 \rightarrow x \geq -\frac{2}{1}$$

$$D_f = \left[-\frac{2}{1}, +\infty\right)$$

$$2) \frac{x(x+1)^2}{(x+1)^2} \rightarrow D_f = \mathbb{R} - \left\{-\frac{1}{2}\right\}$$

$$3) \frac{x^2 + 2x - 1}{x^2 - 1} = \frac{(x+2)(x-1)(x+1)}{(x-1)(x+1)} = x+2 \rightsquigarrow C=2$$

$$\rightarrow x=1 \rightsquigarrow \frac{a+2}{b+1} = 3 \rightarrow 3b = a-1$$

$$\rightarrow x=-1 \rightsquigarrow \frac{-a+2}{b-1} = 1 \rightarrow b = -a+2 \rightarrow 3b = -3a+6$$

$$\Rightarrow a-1 = -3a+6 \rightarrow a=2, \infty \Rightarrow b=0, \infty$$

$$b+C = 2+0, \infty = 2, \infty$$

$$4) \frac{(x+1)(x-1)}{(x-1)^2} = \frac{x+1}{x-1} \Rightarrow \frac{x+1}{x-1} = \frac{x^2-1}{x^2-1} \Rightarrow \frac{x+1}{x-1} = \frac{x^2-1}{x^2-1}$$

$$a=-2, b=1$$

$$a+b+C=0$$

$$\begin{aligned} \text{د) } \underline{u = u+1} \rightarrow (u-1)^T(u) &= u^T - Ku^T + Ku \\ \underline{u = 1-u} \rightarrow (-u-1)^T(-u) &= -u^T - Ku^T - Ku \end{aligned} \quad \left. \begin{array}{l} \\ + \end{array} \right\} -1u^T = g(u)$$

$$\begin{aligned} \text{ه) } f(-1) &\Rightarrow 1-Ku = -1 \leadsto u=1 \leadsto \sqrt{1} = K \rightarrow 1+K = 0 \\ f(K) &\Rightarrow 1-Ku = K \leadsto u=-1 \leadsto \sqrt{-1} + K = 1 \end{aligned}$$

$$\text{و) } u + \sqrt{u} = 4 \Rightarrow u = K \leadsto f(u) = K^K + K \times K = K^2 + 4K$$

$$\begin{aligned} \text{أ) } f(u-1) &= (u-1)^T + u-1 = u^T - Ku^T + Ku - 1 \\ f(1-u) &= (1-u)^T + 1-u = -u^T + Ku^T - Ku + 1 \end{aligned} \quad \left. \begin{array}{l} \\ + \end{array} \right\} 0$$

$$\begin{aligned} \text{ب) } Ku - Ka &\geq 0 \rightarrow u \geq \frac{K}{K} a \xrightarrow{\text{اشتراط}} u=1 \Rightarrow b=K \\ b - Ku &\geq 0 \rightarrow u \leq \frac{b}{K} \quad a = \frac{K}{K^2} \end{aligned}$$

$$Kf(1) - g(1) = K^2 - 1 - K^2 = K \rightarrow K = -1$$

$$Ka - \frac{b}{K} - K = K - 1 + 1 = K$$

$$1.) \quad 2n+1 \geq 0 \rightarrow n \geq -1 \qquad m-n \geq 9 \rightarrow n \leq m$$

$$\Rightarrow [1, m] = [1, V] \rightarrow m = V$$

$$(f-g)(x) = 9\sqrt{x} \rightarrow f(x) - g(x) = x+n - x\sqrt{x} = 9\sqrt{x}$$

$$n = 1\sqrt{x} - 1$$

$$m+n = 1\sqrt{x} - 1 + V = 1\sqrt{x} + 0$$