

$$f(1-x) = \begin{cases} \sqrt{x} + 1 & x \leq 0 \\ 1 + \sqrt{x} & x > 0 \end{cases}$$

$$f(-1) + f(1) = f+1 = \omega$$

$$1-x = -1 \rightarrow -x = -2 \rightarrow x = 2 \quad f(-1) = f$$

$$1-x = 1 \rightarrow -x = 0 \rightarrow x = 0 \quad f(1) = 1$$

$$f(x+\sqrt{x}) = x^f + 1x$$

$$f(x)$$

$$x+\sqrt{x} = y \rightarrow x = y \rightarrow \epsilon + \sqrt{\epsilon} = y$$

$$f(y) = f + 1y = \underline{y \wedge \wedge}$$

$$f(x) = x'' + x$$

$$f(x-1) + f(1-x) = 0$$

$$\left. \begin{aligned} f(x-1) &= (x-1)'' + x-1 = x'' - 2x' + 1 + x-1 \\ f(1-x) &= (1-x)'' + 1-x = 1 - 2x' + x'' + 1-x \end{aligned} \right\} \rightarrow 0$$

$$f(x) = \sqrt{\epsilon x - 3a} + k-1 \quad g(x) = \sqrt{b - \epsilon x} + 3k \quad f-g = \{(1, k)\}$$

$$\left. \begin{aligned} 3a - \frac{b}{\epsilon} - k &\Rightarrow \psi\left(\frac{\epsilon}{\epsilon}\right) - \frac{\epsilon k}{\epsilon} - k = f - 3k \\ \psi f &= \sqrt{\epsilon x - 3a} + k - 1 - \sqrt{b - \epsilon x} - 3k = \sqrt{\epsilon x - 3a} - \sqrt{b - \epsilon x} - k - 1 \end{aligned} \right\} \rightarrow x=1, y=k \rightarrow \mu = \sqrt{k} - 1, \mu k \rightarrow k = -1$$

$$D = \left\{ \begin{aligned} \epsilon x - 3a &\geq 0 \rightarrow \epsilon x \geq 3a \rightarrow x \geq \frac{3a}{\epsilon} \\ b - \epsilon x &\geq 0 \rightarrow b \geq \epsilon x \rightarrow \frac{b}{\epsilon} \geq x \end{aligned} \right\} \Rightarrow D = \left(\frac{3a}{\epsilon}, \frac{b}{\epsilon} \right) \Leftrightarrow (1, k) \rightarrow \frac{1 - \frac{3a}{\epsilon}}{\epsilon} \rightarrow a = \frac{\epsilon}{3}$$

$$f(x) = \sqrt{m-x} + n$$

$$g(x) = \sqrt{2x+2}$$

$$D_{f \wedge g} = [-1, 5]$$

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

$$m+n = ?$$

$$Dg \rightarrow 2x+2 \geq 0 \rightarrow x \geq -1 \quad m-x \geq 0 \quad m \geq x \xrightarrow{\text{بأنه يجب أن يكون}} m=5$$

$$g(x) = \sqrt{2} = 1\sqrt{2} \quad f-g(x) = 4\sqrt{2} \rightarrow f = 5\sqrt{2}$$

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

$$m+n = 5\sqrt{2} - 2 + 5 = 5\sqrt{2} + 3$$

فرض کنیم $f(x) = \begin{cases} rx-1 & [x] > \varepsilon \rightarrow x > \varepsilon \\ \varepsilon x+r & [x] \leq \varepsilon \rightarrow x \leq \varepsilon \end{cases}$

$$g = \sqrt{f(x) - x + 1}$$

$$\left. \begin{aligned} x > \varepsilon &\sim rx-1-x+1 \geq 0 \sim rx \geq 0 \sim x \geq 0 \Rightarrow x \geq \varepsilon \\ x < \varepsilon &\sim \varepsilon x+r-x+1 \geq 0 \sim rx+r \geq -1 \sim rx \geq -1-r \sim x \geq -\frac{1+r}{r} \Rightarrow x \in \left[-\frac{1+r}{r}, \varepsilon\right) \end{aligned} \right\}$$

$$D = \left[-\frac{1+r}{r}, \infty\right)$$

$$g' = \frac{r(\varepsilon x^r + rx^{r-1} + 1 - x + r)}{(\varepsilon x^r + \varepsilon x + 1)^r} = \frac{r(\varepsilon x^r + rx^{r-1} + 1 - x + r)}{(\varepsilon x^r + \varepsilon x + 1)^r} = \frac{r(rx+1)^r}{(rx+1)^r} = \frac{r(rx+1)^{r-1}}{(rx+1)^r}$$

$$= \frac{r}{rx+1} \quad D = \mathbb{R} - \left\{-\frac{1}{r}\right\}$$

$$f(x) = \begin{cases} \frac{x^r + rx^r - x - r}{x^r - 1} & x \neq \pm 1 \\ \frac{a+b}{x+b} & x = \pm 1 \end{cases} \quad g(x) = x + c$$

$$\left. \begin{aligned} \frac{x^r + rx^r - x - r}{x^r - 1} &\Big|_{x=1} = \frac{1-1-1-r}{1-1} \quad \left\{ \rightarrow \frac{(x+r)(x^r-1)}{x^r-1} = x+c \Rightarrow c=r \right. \\ \frac{a+b}{x+b} &\Big|_{x=1} = \frac{a+b}{1+b} = r \Rightarrow a+r = r+b \Rightarrow b=a \end{aligned} \right\}$$

$$\left. \begin{aligned} \frac{r}{1+b} &= r \Rightarrow 1+b = 1 \Rightarrow b=0 \\ \frac{-1-r}{-1+b} &= 1 \Rightarrow -1-r = -1+b \Rightarrow b=-r \end{aligned} \right\} \rightarrow \frac{r}{1+b} = r \Rightarrow b=0 \quad \frac{-1-r}{-1+b} = 1 \Rightarrow b=-r$$

$$f(x) = \frac{x+1}{x-c} \quad g(x) = \frac{x^r-1}{x^r+ax+b} = \frac{(x+1)(x-1)}{(x^r+ax+b)} = \frac{(x+1)(x-1)}{(x-c)(x-1)}$$

$$\rightarrow x^r - (c+1)x + c = x^r + ax + b \Rightarrow a = -c-1, b = c$$

$$a+b+c = -c-1+c+c = c-1 \rightarrow 0$$

از اینجاست که $f(x)$ یک ریشه دارد $x \neq c$ پس $g(x)$ یک ریشه دارد $x \neq c$ پس $c=1$ و $(x-1)^r$ می باشد

$$F(x) = (x-r)^r(x-1) \quad g(x) = f(x+1) + f(1-x)$$

$$g(x) = (x+1-r)^r(x+1-1) + (1-x-r)^r(1-x-1) = (x-r)^r(x) + (-x-r)^r(-x)$$

$$= (x-r)^r(x) - (-x-r)^r(x) = x[(x-r)^r - (-x-r)^r] = x[x^r - \varepsilon x + \varepsilon - x^r + \varepsilon x - \varepsilon] = x[0] = 0$$

$$g(x) = \pm \wedge x^r$$