

$$\frac{x^r + rx^r - x - r}{x^r - 1} = \frac{(x^r - 1)(x + r)}{x^r - 1} = x \quad (2)$$

$$x = 1 \rightarrow \frac{a+r}{1+b} = 1+r=r \rightarrow a-rb=1$$

$$x = -1 \rightarrow \frac{-a+r}{-1+b} = -1+r=1 \rightarrow a+b=r$$

$$(a+b) - (a-rb) = r-1 \rightarrow \cancel{a} + b = r \rightarrow$$

$$b + \cancel{a} = \frac{1}{r} + r = \frac{r^2 + 1}{r}$$

$$g(x) = \frac{(x-1)(x+1)}{x^r + ax + b} = \frac{x+1}{x-c} = f(x) \quad (3)$$

$$x^r + ax + b = (x-1)^r = x^r - rx + 1$$

$$a = -r, b = 1, c = 1 \quad a+b+c = -r+1+1=0$$

برای بررسی دافند و حذف عامل صحت، با به پیچ و برابر

$$(x-1)(x-c) \quad \text{در } c=1 \quad \text{مشتک}$$

$$f(x+1) = x(x-r)^r \quad (4)$$

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

$$\boxed{-rx^r}$$

$$g(x) = \cancel{x^r - rx^r + rx} + (-x^r - rx^r - rx) \Rightarrow g(x) = \cancel{x^r - rx^r + rx} + (-x^r - rx^r - rx)$$

$$1-rx = r \rightarrow -rx = r \rightarrow x = -1 < 0 \rightarrow \underbrace{\sqrt[r]{-1}}_{-1} + r = 1 \quad (5)$$

$$1-rx = -1 \rightarrow -rx = -r \rightarrow x = 1 > 0 \rightarrow \sqrt[r]{1} = 1$$

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

$$f(\underbrace{x+\sqrt{x}}_4) = x^2 + 3x \quad (v)$$

$$x + \sqrt{x} = 4 \rightarrow x + \sqrt{x} - 4 = 0 \quad \underline{t = \sqrt{x}} \quad t^2 + t - 4 = 0$$

$$(t+4)(t-1) = 0 \quad \underline{t = -4} \quad \underline{t = 1} \quad \sqrt{x} = 1 \rightarrow \underline{x = 1}$$

$$\frac{(x)^2}{2 \times 4} + \frac{3(x)}{12} = 24x$$

$$\begin{aligned} & \text{نکته: } (x-1)^2 + x-1 + (1-x)^2 + 1-x \\ & x^2 - 3x^2 + 5x - 1 + (-x^2) + 1 - 5x + 3x^2 = 0 \end{aligned} \quad (n)$$

الف: بیفتن اعداد از دامنهٔ مقادیر $\{1\}$ (9)

$$D = \left[\frac{ra}{\varepsilon}, \frac{b}{\varepsilon} \right] = \{1\} \rightarrow \frac{ra}{\varepsilon} = 1 \rightarrow \begin{aligned} & ra = \varepsilon \\ & \frac{b}{\varepsilon} = 1 \rightarrow b = \varepsilon \end{aligned}$$

$$f(1) = k-1, \quad g(1) = 3k$$

$$r f(1) - g(1) = k \Rightarrow r(k-1) - 3k = k \rightarrow -k-2=k \quad \leftarrow k-1$$

$$ra - \frac{b}{r} - k = \varepsilon - \frac{\varepsilon}{r} - (-1) = 3$$

$$D_{f \times g} = [-1, \infty) \cap (-\infty, m] = [-1, m] = [-1, \sqrt{v}] \quad (1) \quad \underline{m = \sqrt{v}}$$

$$f(x) = \sqrt{v-x} + x = r + x \quad g(x) = \sqrt{r(x)+r} = r\sqrt{r}$$

$$f(x) - g(x) = 4\sqrt{r} \rightarrow (r+x) - r\sqrt{r} = 4\sqrt{r} \rightarrow$$

$$x = 4\sqrt{r} - r$$

$$m+x = \sqrt{v} + (4\sqrt{r} - r) = 2 + 4\sqrt{r}$$

بناسادات آل داود

"برای ثابت کردن $f(x) = x + 1$ ، در صفحات فرزندیم:

الف، حالت $\varepsilon > 0$ [نیمه مثبت] $x > 0$: $f(x) = x + 1$

$$x - 1 - x + 1 \geq 0 \rightarrow x \geq 0$$

اینجا $x > 0$ و $x \geq 0$: $x > 0$

ب، حالت $\varepsilon < 0$ (نیمه منفی) $x < 0$

$$f(x) = \varepsilon x + 1$$

$$\varepsilon x + 1 - x + 1 \geq 0 \rightarrow \varepsilon x + 2 \geq 0 \rightarrow x \geq -\frac{2}{\varepsilon}$$

اینجا $x < 0$ و $x \geq -\frac{2}{\varepsilon}$: $-\frac{2}{\varepsilon} \leq x < 0$

$$D = \left[\frac{\varepsilon}{\mu}, +\infty \right) \cup \left(-\frac{\varepsilon}{\varepsilon} \leq x < 0, x > 0 \right)$$

مجموعه مقادیر x

(۲)

$$(x^2 + \varepsilon x + 1)^2 = 0 \rightarrow x^2 + \varepsilon x + 1 = 0$$

$\div \varepsilon$

$$x^2 + x + \frac{1}{\varepsilon} = 0 \rightarrow \left(x + \frac{1}{2}\right)^2 = 0 \rightarrow x + \frac{1}{2} = 0 \rightarrow x = -\frac{1}{2}$$

$$D_y = R - \left\{ -\frac{1}{2} \right\}$$

$$\rightarrow 2\varepsilon x^2 + 4\varepsilon x + 2x + 1$$

$$\begin{array}{r} 2\varepsilon x^2 + 4\varepsilon x + 2x + 1 \\ - 2\varepsilon x^2 - 4\varepsilon x - 2x - 1 \\ \hline 0 \end{array}$$

$$y = \frac{(2\varepsilon x^2 + 4\varepsilon x + 2x + 1)(x + 1)}{2\varepsilon x^2 + 4\varepsilon x + 2x + 1}$$

$y = x + 1$