

$$1) f(x) = \begin{cases} x-1 & [x] \in \mathbb{R} \\ x+3 & [x] \leq 1 \end{cases} \quad y = \sqrt{f(x)-x+1}$$

$$2) [x] > 1 \rightarrow x > \omega$$

$$3) x-1-x+1=x \rightarrow D=[x]$$

$$4) [x, +\infty) \cap [\omega, +\infty) \Rightarrow [a, +\infty)$$

$$5) [x] \leq 1 \rightarrow x \leq \omega$$

$$6) x+3-x+1=x+4 \quad x+3 > 0 \rightarrow x > -\frac{3}{1}$$

$$7) \hookrightarrow [-\frac{3}{1}, \omega)$$

$$8) [-\frac{3}{1}, \omega) \cup [\omega, +\infty) \rightarrow [-\frac{3}{1}, +\infty)$$

$$9) \frac{x^2 + 3x + 1}{(x^2 + x + 1)^2} = \frac{3}{(x^2 + 1)^2}$$

$$12) \frac{x^2 + 3x + 1}{(x^2 + x + 1)^2} = \frac{3}{x^2 + 1} \quad x^2 + 1 \neq 0$$

$$13) x \neq \pm \frac{1}{i} \quad D_y = \mathbb{R} - \{\pm \frac{1}{i}\}$$

$$14) \frac{x^2 + 3x - 1}{x^2 - 1} = \frac{(x-1)(x^2 + 3x + 1)}{(x-1)(x+1)} = \frac{(x+3)(x+1)}{(x+1)}$$

$$\Rightarrow C=2$$

$$18) f(x) = \begin{cases} x=1 \rightarrow \frac{a+1}{1+b} = 2 \Rightarrow a+1 = 2+b \\ a = b+1 \end{cases}$$

$$19) x=-1 \rightarrow \frac{x-a}{-1+b} = 1 \Rightarrow x-a = b-1 \Rightarrow a = x-b$$

$$20) b+1 = 2-b \Rightarrow b = \frac{1}{2} \rightarrow a = \frac{a}{2}$$

$$21) b+c = \frac{1}{2} + 2 = \frac{5}{2}$$

$$(5) \quad g(x) = \frac{x^r - 1}{x^r + ax + b} \quad f(x) = \frac{x+1}{x-c} \quad f(x) = g(x)$$

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

$$\rightarrow D = \mathbb{R} - \{c\}$$

دا منتهای نیز برابر

$$\Rightarrow x - c = x - 1 \Rightarrow c = 1 \quad a + b + c = 0$$

$$(x-1)^r = x^r - rx + 1 \Rightarrow a = -r \quad b = 1$$

(6)

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

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

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

$$(7) \quad f(1-rx) = \begin{cases} \sqrt[r]{x} + rx & x \leq 0 \\ \sqrt[r]{x} & x > 0 \end{cases}$$

$$f(-1) \xrightarrow{x=1} \sqrt[r]{1} = 1$$

$$f(x) \xrightarrow{x=-1} \sqrt[r]{-1} + r = r-1 = 1$$

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

$$(8) \quad f(x + \sqrt{x}) = x^r + rx$$

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

$$(9) \quad f(x-1) + f(1/x) \rightarrow (x-1)^r + (1/x-1) + (1-x)^r +$$

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

$$= 0$$

Senobar

$$9) f(x) = \sqrt{x^2 - 2a} + k - 1 \quad , \quad g(x) = \sqrt{b - cx} + 3k$$

$$Df = x \geq \frac{3a}{c} \quad Dg = x \leq \frac{b}{c}$$

$$\text{اگر اشتراک داشته باشد} \rightarrow \frac{3a}{c} = 1 \rightarrow a = \frac{c}{3} \quad \frac{b}{c} = 1 \rightarrow b = c$$

$$\begin{aligned} & 2(\sqrt{x^2 - 2a} + k - 1) - (\sqrt{b - cx} + 3k) \\ &= 2k - 2 - 3k = k \rightarrow 2k = 2 \Rightarrow k = -1 \\ & \frac{3a}{c} - \frac{b}{c} - k = 2\left(\frac{c}{3}\right) - \frac{c}{c} - (-1) = 3 \end{aligned}$$

10)

$$f(x) = \sqrt{m - x} + h \rightarrow Df = (-\infty, m] \cap [-1, V]$$

$$g(x) = \sqrt{2x + 2} \rightarrow Dg = [-1, +\infty)$$

$$Df \cap Dg = [-1, V] \Rightarrow m = V$$

$$f - g(x) = 9\sqrt{2}$$

$$\sqrt{V - x} + h - 2\sqrt{2} = 9\sqrt{2} \Rightarrow h = 11\sqrt{2} - 2$$

$$m + h = V - 2 + 11\sqrt{2} = 9 + 11\sqrt{2}$$

پس اینها یکدیگر دارند و هم دفتر B