

$$f(a) = (a+1) \vee = \vee a + \vee$$

$$f(-\vee) = \vee a - \vee$$

$$\vee f(a) = f(-\vee) + a$$

$$1f(a) + 1\vee = \vee a - \vee + a$$

$$10a = -1\wedge$$

$$a = -1\wedge$$

۲

$$\vee(f(x) - \vee f(-x)) = f(x^2 - x)$$

$$\vee(\vee f(-x) - \vee f(x)) = \vee x' + x)$$

$$-\omega f(x) = \vee \omega x^2 + \vee x$$

$$\Rightarrow f(x) = -\vee x^2 - \frac{x}{\omega}$$

۲

سوال ۳:

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + \vee = \sqrt{\left(\sqrt{x} + \frac{1}{\sqrt{x}}\right)^2} + \vee$$

$$\left(\sqrt{x} + \frac{1}{\sqrt{x}}\right)^2 = x + \frac{1}{x} + \vee = \vee + \sqrt{x} + \frac{1}{\vee + \sqrt{x}} + \vee = 9$$

$$f(\vee + \sqrt{x}) = \sqrt{9} + \vee$$

$$\hookrightarrow x + \frac{1}{x} + \vee = \vee - \sqrt{x} + \frac{1}{\vee - \sqrt{x}} + \vee = 9 \Rightarrow f(\vee - \sqrt{x}) = \sqrt{9} + \vee$$

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

$$x=0 \Rightarrow (\vee f(0) = \vee m - 1) \times \vee \Rightarrow 9f(0) = 9m - \vee$$

$$x=-\vee \Rightarrow 9f(0) = 19 + \vee m + \vee n - 1 = 19 + \omega m - 1$$

$$1\omega + \omega m = 9m - \vee \quad \vee m \geq 1\wedge \quad m = \vee, \omega$$

$$f(0) = \frac{\vee \times \vee, \omega - 1}{\vee} = \frac{1\vee, \omega - 1}{\vee}, \quad \frac{1\vee, \omega}{\vee} = 9, 2\omega$$

$$f(-1) + f(-1) = \frac{\vee + 1\vee + \vee}{-1} \rightarrow \vee f(-1) = -1\wedge \quad f(-1) = -9$$

۶

$$D_f = x \leq 1 \Rightarrow D_f = D_g$$

$$D_g = x \leq 1$$

$$R_f = R_g \Rightarrow f(x) = g(x)$$

در تابع برابرند

ضابطه ها یکسان عمل می کنند

۷

$$\left\{ \begin{array}{l} D_f = x > 0 \\ D_g = x > 0 \end{array} \right. \Rightarrow \left\{ \begin{array}{l} D_f = D_g \\ R_f = R_g \end{array} \right.$$

$$\Rightarrow f(x) = g(x)$$

در تابع برابرند

۸

$$D_f = x > 0$$

$$D_g = x > 0$$

$$f(x) = \underbrace{[\sqrt{x} - [\sqrt{x}]]}_{\text{بین دو}} = 0$$

$$g(x) = \sqrt{x - |x|} = 0$$

هر دو تابع به ازای تمام مقادیر دامنه  $x > 0$  برابر صفر است.

در تابع برابرند

۹

الف)  $\begin{matrix} g(1) = 1 \\ f(1) = 2 \end{matrix} \Rightarrow \frac{1+1}{1-1} = \frac{2}{0}$

ب)  $\begin{matrix} g(2) = 3 \\ f(2) = 3 \end{matrix} \Rightarrow \frac{3+2}{2-3} = \frac{5}{-1} = -5$

ج)  $\begin{matrix} f(0) = 0 \\ g(0) = 1 \end{matrix} \Rightarrow 0 \times -1 = 0$

الف)  $\begin{matrix} 3t-1=x \\ t=\frac{x+1}{3} \end{matrix}$   $t = \frac{1+1}{3} = \frac{2}{3} \Rightarrow g(1) = 1$   $t = \frac{0+1}{3} = \frac{1}{3} \Rightarrow g(\frac{1}{3}) = 5$

$t = \frac{-1+1}{3} = 0 \Rightarrow g(0) = 4$   $t = \frac{2+1}{3} = 1 \Rightarrow g(1) = 2$

$t = \frac{3+1}{3} = \frac{4}{3} \Rightarrow g(\frac{4}{3}) = -1 \Rightarrow g = \left\{ (1, 1), (0, 4), (\frac{1}{3}, 5), (-\frac{1}{3}, 2), (\frac{4}{3}, -1) \right\}$

ب) ①  $|a| = 2 \rightarrow x = \pm 2$

②  $|a| = 0 \rightarrow x = 0$

③  $|a| = 3 \rightarrow x = \pm 3$

$h(x) = \{(1, 1), (-1, 1), (2, -1), (-2, -1), (0, 5)\}$

$|x| = 1 \times$   $|x| = -2 \times$