

$$f(x) = \begin{cases} (a+1)(x+1) & ; x > 1 \\ 1^a + 1^x & ; x \leq 1 \end{cases} \quad \sim \quad \begin{aligned} & 1^f(5) = f(-1) + a \\ & 1^f(a+1)(5+1) = 1^a + 1^f(-1) + a \end{aligned}$$

$$\sim 1^f(a+1) \times (6) = 1^a - f + a \sim 1^f a + 1^f = f_0 - f$$

$$\sim 1^f a - f a = -f - 1^f \sim 1^f a = -1^f \sim a = -\frac{1^f}{1^f} = -1, 1 \quad \sim \quad \boxed{a = -1, 1}$$

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

$$f(1-\sqrt{3}) + f(1+\sqrt{3}) = \sqrt{1-\sqrt{3}} + \frac{1}{\sqrt{1-\sqrt{3}}} + 1 + \sqrt{1+\sqrt{3}} + \frac{1}{\sqrt{1+\sqrt{3}}} + 1 = 2\sqrt{1+\sqrt{3}} + 2\sqrt{1-\sqrt{3}} + 2$$

$$A = \sqrt{1+\sqrt{3}} + \sqrt{1-\sqrt{3}} \sim A^2 = 1 + \sqrt{3} + 1 - \sqrt{3} + 2 = 4 \sim A = \sqrt{4}$$

$$\sim 2A + 2 = 2\sqrt{4} + 2 \sim \boxed{2\sqrt{4} + 2}$$

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

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

$$\sim f f(x) - 4 f(-x) = 1 x^1 - 2 x$$

$$- 4 f(x) + 4 f(-x) = 12 x^1 + 1^f x$$

$$- 5 f(x) = 1^f x^1 + x \sim f(x) = \frac{1^f x^1 + x}{-5}$$

$$\sim \boxed{f(x) = -f x^1 - \frac{1}{5} x}$$

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

$$\xrightarrow{x=0} 1^f f(0) = 1^f m - 1$$

$$\sim f(0) = \frac{1^f m - 1}{1} = \frac{1^f \times f, 5 - 1}{1} = \frac{1^f, 5 - 1}{1}$$

$$\xrightarrow{x=-1} 4 f(0) = 1^f + 1^f m + 1^f m - 1 = 5m + 1^f$$

$$\sim \frac{1^f, 5}{1} = 4, 1^f$$

$$\sim 5m + 1^f = 4m - 1^f \sim 1^f + 1^f = 4m - 5m$$

$$\sim f m = 1^f \sim m = \frac{1^f}{f} = \frac{4}{f} = f, 5 \sim m = f, 5$$

$$\sim \boxed{f(0) = \frac{1^f}{f} = 4, 1^f}$$

$$f(x) + f\left(\frac{1}{x}\right) = \frac{1^f x^1 - 1^f x + 1^f}{x}$$

$$\xrightarrow{x=-1} f(-1) + f(-1) = \frac{1^f (-1)^1 - 1^f (-1) + 1^f}{-1}$$

$$\sim 2 f(-1) = \frac{1^f + 1^f + 1^f}{-1} \sim 1^f f(-1) = -1^f \sim \boxed{f(-1) = -9}$$

$\begin{cases} f(x) = (x-1)\sqrt{1-x} \rightarrow 1-x \geq 0 \rightarrow x \leq 1 \rightarrow Df = (-\infty, 1] \\ g(x) = -\sqrt{(1-x)^3} \rightarrow (1-x)^3 \geq 0 \rightarrow Dg = (-\infty, 1] \end{cases}$ دامنه‌ها برابر اند! تابع‌ها برابر هستند! $-\sqrt{(1-x)^3} = - 1-x \times \sqrt{1-x} = -(1-x)\sqrt{1-x} = (x-1)\sqrt{1-x}$ تابع‌ها برابر اند!	۶		
$\begin{cases} f(x) = x\sqrt{x} \rightarrow Df = [0, +\infty) \\ g(x) = \sqrt{x^3} \rightarrow Dg = [0, +\infty) \end{cases}$ دامنه‌ها برابر اند! تابع‌ها برابر هستند! $\rightarrow \sqrt{x^3} = x \sqrt{x} = x\sqrt{x}$ تابع‌ها برابر اند!	۷		
$\begin{cases} f(x) = [\sqrt{x} - \sqrt{-x}] \rightarrow Df = [0, +\infty) \\ g(x) = \sqrt{x- x } \rightarrow x- x \geq 0 \rightarrow x \geq x \rightarrow Dg = [0, +\infty) \end{cases}$ تابع‌ها برابر هستند! همواره صفر هستند!	۸		
الف) $\left(\frac{f+g}{f-g}\right)(1) = \frac{1+1}{1-1} = \frac{2}{0} = \text{تعریف نشده}$ $\rightarrow \boxed{3}$	ب) $\left(\frac{f+g}{f-g}\right)(2) = \frac{2+2}{2-2} = \frac{4}{0} = \text{تعریف نشده}$ $\rightarrow \boxed{\text{تعریف نشده}}$	ج) $f(0)g(-1) = 0 \times 1 = 0$ $\rightarrow \boxed{0}$	۹
$f(x) = \{(2, 1), (-1, 4), (0, 5), (-2, 2), (3, -1)\}$ الف) $g(x) = f(3x-1)$ $\rightarrow g(x) = \{(1, 1), (-2, 4), (\frac{1}{3}, 5), (-\frac{1}{3}, 2), (\frac{4}{3}, -1)\}$	ب) $h(x) = f(x)$ $h(x) = \{(2, 1), (0, 5), (3, -1)\}$	۱۰	