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نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس از مدرسه
 نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس از مدرسه

$$\left. \begin{aligned} f(x) &= \left(\frac{1}{x}\right)^{x-r} \Rightarrow f(x+1) = \left(\frac{1}{x+1}\right)^{x-1} \\ y &= \sqrt{x^r f(x+1)} \Rightarrow x^r f(x+1) \geq 0 \end{aligned} \right\} \Rightarrow x^r x^{(r-1-x)} \geq 0$$

$$\frac{0}{- \phi + \phi -} \\ D_f = [0, 1] \checkmark$$

$$f(x) = \sqrt{x + |x+r|} \Rightarrow f(-x) = \sqrt{-x + |-x+r|} = -x + |-x+r| \geq 0 \\ | -x+r | = | x-r | \\ \Rightarrow -x + |x-r| \geq 0 \rightarrow \frac{r}{-x+r} \geq 0 \Rightarrow D_f = (-\infty, 1] \checkmark$$

$$y = \sqrt{\frac{x-1}{f(x)}} \rightarrow \frac{x-1}{f(x)} \geq 0$$

$$D_f = (-1, 1] \cup (1, 2) \checkmark$$

$$y_1 = \frac{1}{9x^r - 5x^r - 2x - r} = \frac{1}{(9x^r - 5x^r + 1)(x + r)} = \frac{1}{(4x^r - 1)(x + r)} = \frac{1}{(x^r - 1)(x + r)} = \frac{1}{(x^r - 1)(x + r)}$$

$$\Rightarrow D_{y_1} = \mathbb{R} - \{ \text{points where denominator is 0} \} = D_{y_2} = \mathbb{R} - \{ \text{points where denominator is 0} \}$$

$$\Rightarrow r x^r - x - r = r x^r + a x + b \Rightarrow \begin{cases} a = -1 \\ b = -r \end{cases} \Rightarrow a + b = -1 - r = -(1+r) = r$$

$$\Rightarrow \sqrt{a+b} = \sqrt{r} = [r] \checkmark$$

$$\left. \begin{aligned} f(x) &= x^r + x \\ f\left(\frac{x}{n}\right) &= \left(\frac{x}{n}\right)^r + \frac{x}{n} = \frac{x^r}{n^r} + \frac{x}{n} \end{aligned} \right\} f(x) - f\left(\frac{x}{n}\right) = x^r + x - \frac{x^r}{n^r} - \frac{x}{n}$$

$$y = \sqrt{f(x) - f\left(\frac{x}{n}\right)} \Rightarrow f(x) - f\left(\frac{x}{n}\right) \geq 0$$

$$\Rightarrow \left(x^r - \frac{x^r}{n^r}\right) + \left(x - \frac{x}{n}\right) \geq 0 \Rightarrow \left(x - \frac{x}{n}\right) \left(x^r + 1 + \frac{1}{n^r}\right) + \left(x - \frac{x}{n}\right) \geq 0$$

$$\Rightarrow \left(x - \frac{x}{n}\right) \left(x^r + 1 + \frac{1}{n^r}\right) \geq 0 \rightarrow \frac{-r}{+ \phi - \phi +} \Rightarrow D_y = \mathbb{R} - (-1, 1)$$

$$x = \frac{x}{n} \Rightarrow x^r + 1 + \frac{1}{n^r} \geq 0 \Rightarrow x^r + 1 + \frac{1}{n^r} \geq 0$$

$$\frac{x^r - r}{n} \rightarrow \frac{-r}{-1 + 1 - 1 +}$$

$$[-1, 0) \cup [1, +\infty)$$

$f(x^2+n) = 2x^2-1$ $f(10) = ? \rightarrow x^2+n=10 \Rightarrow x^2+n-10=0 \Rightarrow (x-2)(x^2+2n+4) + (x-2) = 0$ $\Rightarrow (x-2)(x^2+2n+4) = 0 \Rightarrow \boxed{x=2} \Rightarrow f(10) = 3$ $f(2) = ? \rightarrow x^2+n=2 \Rightarrow x^2+n-2=0 \Rightarrow (x-1)(x^2+n+2) = 0 \Rightarrow \boxed{x=1} \Rightarrow f(2) = 1$ $(I), (II) \Rightarrow f(2) + f(10) = \boxed{4}$	۴
$f(x) = x^2 - 6x^2 + 12x = x^2 - 6x^2 + 12x - 4 + 4 = (x-2)^2 + 4 \Rightarrow f(\sqrt{5}+2) = 10$ $g(x) = x^2 + 9x^2 + 20x = x^2 + 9x^2 + 20x + 25 - 25 = (x+5)^2 - 25 \Rightarrow g(\sqrt{5}-2) = -20$ $\Rightarrow \frac{g(\sqrt{5}-2)}{f(\sqrt{5}+2)} = \frac{-20}{10} = \boxed{-2}$	۷ ۲
$f(x) = \sqrt{x+5\sqrt{x-2}} = \sqrt{x-2+5\sqrt{x-2}+4} = \sqrt{(x-2+2)^2} = \sqrt{x-2}+2 = \sqrt{x-2}+2$ $g(x) = \sqrt{x-5\sqrt{x-2}} = \sqrt{x-2-5\sqrt{x-2}+4} = \sqrt{(\sqrt{x-2}-2)^2} = \sqrt{x-2}-2 = \begin{cases} \sqrt{x-2}-2 & x \geq 4 \\ -\sqrt{x-2}+2 & x < 4 \end{cases}$ $\Rightarrow f(x) + g(x) = \begin{cases} 2\sqrt{x-2} & x \geq 4 \Rightarrow \frac{a+b}{c} = \frac{0+2}{1} = \boxed{2} \\ 2 & x < 4 \Rightarrow \frac{a+b}{c} = \frac{2+0}{1} = \boxed{2} \end{cases}$ توابع حالت ۲ نامعلومه طلا غلطه	۲
$g(x) = \{(1,1), (1,0), (2,1), (0,1)\} \Rightarrow D_g = \{1, 2\}$ $f(x) = \frac{x+2}{x^2+x+1} \Rightarrow D_f = \mathbb{R} - \{1, 2\}$ $D_f \cap D_g = \{0, 2\}$ $f(2) = \frac{4}{7} = -\frac{4}{7} \Rightarrow \frac{g}{f} = \{(2, -\frac{7}{4}), (0, 1)\}$	۲ ۹
الف) $f(2x) = \{(1,2), (\frac{3}{2}, -1), (2,2), (-\frac{1}{2}, 6)\}$ ✓ ب) $f(x^2) = \{(6,2), (4,2), (\sqrt{5}, -1), (-\sqrt{5}, -1), (2,2), (-2,2)\}$ ✓ ج) $2g'(x)+1 = \{(-2, 19), (1, 3), (3, 9), (-1, 1)\}$ ✓ د) $\frac{f}{g} = \{(1, -4), (3, -1), (-1, 3), (5, -1)\}$ ✓	۲ ۱۰