

$f(x^2+n) = 2x^2-1$ $f(10) = ? \rightarrow x^2+n=10 \Rightarrow x^2+n-10=0 \Rightarrow (x-2)(x^2+2x+4) + (x-2) = 0$ $\Rightarrow (x-2)(x^2+2x+4) = 0 \Rightarrow \boxed{x=2} \Rightarrow f(10) = 2$ $f(2) = ? \rightarrow x^2+n=2 \Rightarrow x^2+n-2=0 \Rightarrow (x-1)(x^2+x+2) = 0 \Rightarrow \boxed{x=1} \Rightarrow f(2) = 1$ $(I), (II) \Rightarrow f(2) + f(10) = \boxed{3}$	6
$f(x) = x^2 - 6x^2 + 12x = x^2 - 6x^2 + 12x - 4 + 4 = (x-2)^2 + 4 \Rightarrow f(\sqrt{5}+2) = 10$ $g(x) = x^2 + 9x^2 + 20x = x^2 + 9x^2 + 20x + 25 - 25 = (x+5)^2 - 25 \Rightarrow g(\sqrt{5}-2) = -20$ $\Rightarrow \frac{g(\sqrt{5}-2)}{f(\sqrt{5}+2)} = \frac{-20}{10} = \boxed{-2}$	7
$f(x) = \sqrt{x+5\sqrt{x-2}} = \sqrt{x-2+5\sqrt{x-2}+2} = \sqrt{(x-2+5+2)\sqrt{x-2}} = \sqrt{x-2}+2 = \sqrt{x-2}+2$ $g(x) = \sqrt{x-5\sqrt{x-2}} = \sqrt{x-2-5\sqrt{x-2}+2} = \sqrt{(x-2-5+2)\sqrt{x-2}} = \sqrt{x-2}-2 = \begin{cases} \sqrt{x-2}-2 & x \geq 4 \\ -\sqrt{x-2}+2 & x < 4 \end{cases}$ $\Rightarrow f(x) + g(x) = \begin{cases} 2\sqrt{x-2} & x \geq 4 \Rightarrow \frac{a+b}{c} = \frac{0+2}{1} = \boxed{2} \\ 2 & x < 4 \Rightarrow \frac{a+b}{c} = \frac{2+0}{1} = \boxed{2} \end{cases}$	8
$g(x) = \{(\frac{1}{2}, 1), (1, 0), (2, 1), (0, 2)\} \Rightarrow D_g = \{1, 0, 2\}$ $f(x) = \frac{x+2}{x^2+x+1} \Rightarrow D_f = \mathbb{R} - \{1, 2\}$ $D_f \cap D_g = \{0, 2\} \Rightarrow f(2) = \frac{4}{5} = -\frac{4}{5} \Rightarrow \frac{g}{f} = \left\{ (2, -\frac{5}{4}), (0, 2) \right\}$	9
الف) $f(x) = \{(\frac{1}{2}, 2), (\frac{3}{2}, -1), (2, 2), (-\frac{1}{2}, 6)\}$ ب) $f(x) = \{(6, 2), (4, 2), (\sqrt{3}, -1), (\sqrt{3}, -1), (2, 2), (-2, 2)\}$ ج) $2g'(x)+1 = \{(-2, 19), (1, 3), (3, 9), (-1, 1)\}$ د) $\frac{f}{g} = \{(1, -4), (3, -1), (-1, 4)\} = \{(1, -4), (3, -1)\}$	10