

$[x] > 4 \rightarrow x > 5$
 $f(x) > x - 1$
 $2x - 1 > x - 1 \rightarrow 2x - x > -1 + 1 \rightarrow x > 0$
 $(1) \quad [x] \leq 4 \rightarrow x < 5$
 $f(x) = 4x + 3$
 $4x + 3 > x - 1 \rightarrow x > -\frac{4}{3}$
 $(2) \quad (1) \cup (2) = [-\frac{4}{3}, 5)$

$(x^2 + 4x + 1)^2 \neq 0 \rightarrow (2x + 1)^2 \neq 0 \rightarrow x \neq -\frac{1}{2} \rightarrow D_x = \mathbb{R} - \{-\frac{1}{2}\}$
 $(x^2 + 4x + 1)^2 = (2x + 1)^4$
 $\Rightarrow \frac{(x^2 + 4x + 1)^2}{(2x + 1)^4} = \frac{(2x + 1)^4}{(2x + 1)^4} \Rightarrow x = \frac{3}{2x + 1} \quad (x \neq -\frac{1}{2})$

$a + b + c = -2 + 1 + 1 = 0$
 $c = 1, b = 1, a = -2$
 $\frac{(x-1)(x+1)}{x^2 + ax + b} \rightarrow x^2 + ax + b = (x-1)(x-c) \rightarrow x^2 - cx - x + c = x^2 - (c+1)x + c$
 $a = -(c+1) = -c-1$

$f(x+1) = ((x+1)-3)^2((x+1)-1) \Rightarrow (x-2)^2 \times x = (x^2 - 4x + 4)x = x^3 - 4x^2 + 4x$
 $f(1-x) = ((1-x)-3)^2((1-x)-1) = (-x-2)^2(-x) = (x^2 + 4x + 4)(-x) = -x^3 - 4x^2 - 4x$
 $g(x) = -8x^2$

$x = 1 \leftarrow 1 - 2x = -1$
 $f(-1) = \sqrt[4]{-1} = 4$
 $f(3) = \sqrt[4]{-1 + 2} = -1 + 2 = 1 \Rightarrow f(-1) + f(3) = 4 + 1 = 5$

$x + \sqrt{x} = 9$
 $\sqrt{x} = t \rightarrow t^2 + t - 9 = 0 \rightarrow (t+3)(t-2) = 0$
 $t = -3$
 $t = 2 \rightarrow \sqrt{x} = 2 \rightarrow x = 4$
 $f(4) = x^4 + 3x$
 $f(4) = 256 + 12 = 268$

$(1-x) = -(x-1)$
 $f(1-x) = -f(x-1)$
 $\Rightarrow f(x-1) + f(1-x) = f(x-1) + (-f(x-1)) = 0$