

$$y = \sqrt{x f(x)} \quad x f(x) \geq 0 \Rightarrow Df = [-\infty, 0] \cup [2, \infty]$$

$$y = \sqrt{\frac{-x}{f(x)}} \quad f(x) \neq 0 \text{ و } f(x) < 0 \Rightarrow Df = (-\infty, -2) - \{0\} \Rightarrow$$

اعداد = -2 و -1 و 1 و 3

$$f(x) - 2f(2) = x^2 - 3x + 2 \quad \boxed{x=2} \Rightarrow f(2) - 2f(2) = 2 - 4 + 2 \Rightarrow \boxed{f(2) = -2}$$

$$\boxed{x = -2} \Rightarrow f(-2) + 2 = 4 + 6 + 2 \Rightarrow \boxed{f(-2) = 10}$$

$$f(f(\omega)) + f(f(1)) = ?$$

$$f(x) = \begin{cases} x - \sqrt{x+2} & x > 3 \text{ ①} \\ 2x+3 & x \leq 3 \text{ ②} \end{cases}$$

$$f(\omega) \xrightarrow{1 \text{ ②}} \omega - \sqrt{\omega+2} = 2$$

$$f(2) \xrightarrow{2 \text{ ②}} 2 \times 2 + 3 = \boxed{7}$$

$$f(1) \xrightarrow{2 \text{ ②}} 2 + 3 = \omega$$

$$f(\omega) \xrightarrow{1 \text{ ②}} \omega - \sqrt{\omega+2} = \boxed{2}$$

$$f(\underbrace{f(\omega)}_2) + f(\underbrace{f(1)}_\omega) = 9$$

$$f(x) = ax^2 - bx + 2$$

$$f(x-1) - f(x) = 4x + 2$$

$$a(x-1)^2 - b(x-1) + 2 - ax^2 + bx - 2 = 4x + 2$$

$$a(x^2 + 1 - 2x) - bx + b + 2 - ax^2 + bx - 2 = 4x + 2$$

$$ax^2 + a - 2ax - bx + b + 2 - ax^2 + bx - 2 = 4x + 2$$

$$a + b - 2ax = 4x + 2 \Rightarrow \boxed{a = -3} \text{ و } \boxed{b = \omega} \Rightarrow b - a = \omega - (-3) = \boxed{8}$$

$f(x) = x^2 - 3x + 1$ $\frac{2f(3) + f(-1)}{f'(2)} = ?$ $\frac{2(1) + 0}{(-1)^2} = \boxed{1}$	6
$f(x) = \begin{cases} 3x+1 & x \geq 2 \text{ ①} \\ x^2 & 2 > x \text{ ②} \end{cases}$ $\frac{3f(4) - 2f(-2)}{f(2)} = ?$ $\frac{3(13) - 2(4)}{4} = \boxed{\frac{31}{4}}$	7
$f = \{(2,4), (3,1), (4,1), (1,4)\}$ $\frac{f(f(4)) - f(f(3))}{f(4) - 2} = \frac{4 - 4}{4} = 0$	8
$f(x) = \frac{x^2 + 2x + 9}{x^2 + 2x + 0}$ $f(f(\sqrt{3}-2)) = ?$ $\frac{(x+2)^2 + 0}{(x+2)^2 + 1}$ $f(\sqrt{3}-2) = \frac{\sqrt{3}^2 + 0}{\sqrt{3}^2 + 1} = \frac{1}{3} = \frac{1}{3}$ $f\left(\frac{1}{3}\right) = \frac{\left(\frac{1}{3}+2\right)^2 + 0}{\left(\frac{1}{3}+2\right)^2 + 1} = \frac{49}{52}$	9
$f(x) = x^2 + \frac{1}{x^2}$ $(f(\sqrt{x}))^2 - f(x) = ?$ $f(\sqrt{x}) = x + \frac{1}{x} \Rightarrow f(\sqrt{x})^2 = x^2 + \frac{1}{x^2} + 2$ $x^2 + \frac{1}{x^2} + 2 - x^2 - \frac{1}{x^2} = \boxed{2}$	10