

$$x f(x) \geq 0 \rightsquigarrow x y \geq 0$$

$+x+ > 0$
 $-x- > 0$
 $0x+ = 0$
 $0x- = 0$
 $0x0 = 0$

$D_f = [-5, 0] \cup [2, 5]$

$$\frac{-x}{f(x)} \geq 0 \rightsquigarrow -\frac{x}{y} \geq 0 \quad | \quad \frac{x}{y} \leq 0$$

$f(x) \neq 0 \rightarrow x \in [-2, 0) \cup (2, 4]$

$D_f = (-3, 0) \cup (0, 2)$
شامل ۳ عدد

$$f(x) - 2f(2) = x^2 - 3x + 4 \rightsquigarrow x=2 \quad f(2) - 2f(2) = 4 - 6 + 4 \rightsquigarrow f(2) = -2$$

$$f(x) + 4 = x^2 - 3x + 4 \rightsquigarrow f(-2) \rightarrow (-2)^2 - 3(-2) = 4 + 6 = 10$$

$$f(f(5)) + f(f(1)) = ?$$

$u = \sqrt{u+4} \quad ; u > 3$
 $2u+3 \quad ; u \leq 3$

$f(2) + f(5) \rightsquigarrow 7 + 2 = 9$
 $f(2) + 3 = 7$

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

$ax^2 - 2ax + a - bx + b$

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

$-2ax = 4x \rightarrow a = -2$
 $a + b = 2 \rightarrow b = 4$

$a - b = -6$

$$f(u) = \frac{u^2 + 4u + 4}{u^2 + 4u + 4} \rightarrow \frac{(u+2)^2 + 1}{(u+2)^2 + 3} \left\{ \begin{array}{l} u = \sqrt{3} - 2 \\ \frac{(\sqrt{3}-2+2)^2 + 1}{(\sqrt{3}-2+2)^2 + 3} \end{array} \right\} \Rightarrow$$

$$\frac{(\sqrt{3})^2 + 1}{(\sqrt{3})^2 + 3} = \frac{4}{6} = \frac{2}{3} \rightarrow f(\sqrt{3}-2) = \frac{2}{3}$$

$$f\left(u - \frac{1}{u}\right) = \frac{u^4 + 1}{u^2} \Rightarrow \left(u - \frac{1}{u}\right)^2 + 2 \rightarrow f(0) = 0^2 + 2 = 2$$

$$f(-3) = (-3)^2 + 2 = 11$$

$$\text{الف) } \frac{f}{g} = \left\{ (2, 0), (1, -\sqrt{2}), (0, \frac{2}{3}) \right\}$$

$$\text{ب) } \frac{g}{f} = \left\{ \left(\frac{2}{5}, \frac{5}{0} \right), (1, -\frac{\sqrt{2}}{2}), (0, \frac{3}{2}) \right\}$$

تعريف لستة

$$\text{الف) } 2f(u) = \left\{ (2, 2), (3, 1), (-5, 4), (1, -4) \right\}$$

$$\text{ب) } f(u) + 1 = \left\{ (2, 2), (3, 5), (-5, 3), (1, -1) \right\}$$

$$\text{ج) } 3f^2(u) + 1 = \left\{ (2, 4), (3, 49), (-5, 13), (1, 13) \right\}$$

$$\text{د) } f(2u) = \left\{ (1, 1), (1, 5, 4), (-\frac{1}{2}, 2), (0, 5, -2) \right\}$$

$$\text{الف) } f - g = \left\{ (1, 4), (2, 2), (3, 2) \right\}$$

$$\text{ب) } \frac{2f}{g} = \left\{ (2, 4), (3, -2) \right\}$$