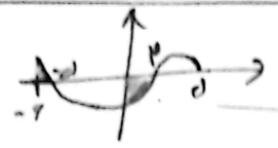
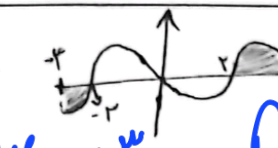


$y = \sqrt{x f(x)}$ $x f(x) \geq 0$
 (تاسفی) $\Rightarrow$  $\Rightarrow [-2, 0) \cup (0, 2]$
 از آنجایی که $f(x)$ غیر همبسته است $\Rightarrow D_f = [-2, 2] - \{[-2, 0) \cup (0, 2]\}$ با $D_f = [-2, 0] \cup [2, 2]$ (۲)

$y = \sqrt{\frac{-x}{f(x)}} \Rightarrow \frac{-x}{f(x)} \geq 0$ ✓
 (تاسفی) $\Rightarrow$  $\Rightarrow [-2, -2) \cup (-2, 0]$
 از آنجایی که $f(x)$ همبسته است $\Rightarrow D_f = [-2, 0] - \{[-2, -2) \cup (-2, 0]\}$ با $D_f = [-2, -2] \cup [0, 0]$
 اعداد صحیح مورد نظر: $-5, -2, -1, 0, 1, 2, 5 \leftarrow 7$ عدد صحیح ۳ عدد صحیح $D_f = (-3, 1) - \{0\}$
(۱۵)

$f(2) - 2f(2) = 2^2 - 4 + 2 \Rightarrow -f(2) = 2 \Rightarrow f(2) = -2$
 $f(-2) - 2f(-2) = (-2)^2 - (-4) + 2 \Rightarrow f(-2) = 4 + 4 + 2 = 10$
 $f(-2) = 10$ (۲)

$f(f(2)) + f(f(1)) = f(2) + f(1) = 2 + 2 = 4$ (۲)
 $f(x) = \begin{cases} x - \sqrt{x+4} & ; x > 3 \\ x + 2 & ; x \leq 3 \end{cases}$

$f(x-1) - f(x) = 4x + 2 \Rightarrow a(x-1) - b(x-1) + x - (ax^2 - bx + x) = 4x + 2$
 $\Rightarrow ax^2 - 2ax + a - bx + b - ax^2 + bx = 4x + 2 \Rightarrow -2a x + a + b = 4x + 2$
 $\begin{cases} -2a = 4 \\ a + b = 2 \end{cases} \Rightarrow b - a = 1 \Rightarrow a - b = -1$ (۲)

$$f(x) = \frac{x^2 + 5x + 6}{x^2 + 4x + 4} \Rightarrow f(\sqrt{x} - 2) = \frac{(\sqrt{x}-2)^2 + 5(\sqrt{x}-2) + 6}{(\sqrt{x}-2)^2 + 4(\sqrt{x}-2) + 4} = \frac{x - 2\sqrt{x} + 4 + 5\sqrt{x} - 10 + 6}{x - 2\sqrt{x} + 4 + 4\sqrt{x} - 8 + 4} = \frac{x + 3\sqrt{x} - 1}{x + 2\sqrt{x} - 4} = \frac{x}{2} = 2$$

10

$$f(\sqrt{x} - 2) = 2 \quad f(u) = \frac{(u+2)^2 + 1}{(u+2)^2 + 4}$$

$$f(\sqrt{x} - 2) = \frac{x}{2}$$

$$f(x - \frac{1}{x}) = \frac{x^2 + 1}{x^2}$$

$$f(u) = u^2 + 1$$

$$f(-3) = 11$$

$$(-3 = x - \frac{1}{x}) \cdot x \Rightarrow x^2 + 5x - 1 = 0 \Rightarrow x^2 = -5x + 1$$

$$f(-3) = \frac{(-5x+1)^2 + 1}{-5x+1} = \frac{25x^2 - 10x + 2}{-5x+1} = \frac{25(-5x+1) - 10x + 2}{-5x+1} = \frac{-125x + 25 - 10x + 2}{-5x+1} = \frac{-135x + 27}{-5x+1} = 11$$

$$الف) \frac{f}{g} = \left\{ (1, 0), (1, \frac{2}{\sqrt{11}}), (0, \frac{2}{\sqrt{11}}) \right\}$$

$$ب) \frac{g}{f} = \left\{ (1, \frac{\sqrt{11}}{-2}), (0, \frac{\sqrt{11}}{2}) \right\}$$

✓ 11

$$f(x) = \{(1, 0), (1, -2), (0, 2), (2, 1)\} \quad g(x) = \{(1, \sqrt{11}), (1, \sqrt{11}), (0, 2), (2, -1)\}$$

$$f(x) = \{(1, 1), (2, 2), (-2, 2), (1, -2)\}$$

$$الف) 2f(x) = \{(2, 2), (4, 4), (-4, 2), (2, -2)\}$$

$$ب) f(x) + 1 = \{(1, 2), (2, 3), (-2, 3), (1, -1)\}$$

$$ج) 3f^2(x) + 1 = \{(1, 13), (2, 18), (-2, 18), (1, 3)\}$$

$$f(x) = \{(1, 2), (2, 2), (1, 2), (2, -2)\} \quad g(x) = \{(1, 1), (2, 1), (-1, 2), (-2, 2), (2, -1)\}$$

$$الف) f \cdot g = \{(1, 2), (1, 2), (2, 2)\}$$

$$ب) \frac{2f}{g} = \{(1, 4), (1, 4), (2, -2)\}$$

✓ 11