

نام و نام خانوادگی: اساترک تراهی

$$x \in [-a, -d) \quad \langle \cdot \Rightarrow f(x) \rangle \cdot \Rightarrow x f(x) \rangle \cdot$$

$$(r, \alpha] \subset \mathbb{R}$$

$$\textcircled{1} y \in (-\epsilon, \epsilon) - \{0\}$$

$$\Rightarrow f(-r) = -\frac{\mu\lambda}{\mu} \quad h(r) = r \cdot f(r) \leq r \rightarrow f(r) \leq r \rightarrow f(r) \leq x^r - a_n \rightarrow f(-r) = 1.$$

$$f(v) \Rightarrow v \times v + v = v$$

$$f(n-1) - f(n) = -ra_n + a + b$$

$$a - b = -1 - 0 = -1$$

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

$$x^2 + 4x \Rightarrow x = \sqrt{3} - 2 \Rightarrow x^2 = (\sqrt{3} - 2)^2 \Rightarrow x^2 = (\sqrt{3})^2 - 2(\sqrt{3})(2) + (2)^2 \Rightarrow x^2 = 3 - 4\sqrt{3} + 4 \Rightarrow x^2 = 7 - 4\sqrt{3}$$

$$x^2 + 4x = (7 - 4\sqrt{3}) + (4\sqrt{3} - 8) \Rightarrow x^2 + 4x = 7 - 4\sqrt{3} + 4\sqrt{3} - 8 \Rightarrow x^2 + 4x = -1$$

$$\frac{-1 + 4}{-1 + 4} = \frac{-4}{4} = -1$$

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

$$f(-3) = ?$$

$$x - \frac{1}{x} = -3$$

$$\Rightarrow x^2 + \frac{1}{x^2} = \left(x - \frac{1}{x}\right)^2 + 2$$

$$x^2 + \frac{1}{x^2} = y^2 + 2 \Rightarrow f\left(x - \frac{1}{x}\right) = x^2 + \frac{1}{x^2}$$

$$f(y) = y^2 + 2 \Rightarrow f(-3) = (-3)^2 + 2 = 9 + 2 = 11$$

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

$$\left(x - \frac{1}{x}\right)^2 = x^2 - 2\left(x\right)\left(\frac{1}{x}\right) + \left(\frac{1}{x}\right)^2 \Rightarrow \left(x - \frac{1}{x}\right)^2 = x^2 - 2 + \frac{1}{x^2} \Rightarrow$$

$$f(x) = \{(2, 0), (1, -4), (0, 2), (1, 1)\}$$

$$g(x) = \sqrt{9 - x^2}$$

$$\text{الف) } \frac{f}{g} \Rightarrow \left\{ \left(2, \frac{0}{\sqrt{9-4}}\right), \left(1, \frac{-4}{\sqrt{9-1}}\right), \left(0, \frac{2}{\sqrt{9-0}}\right), \left(1, \frac{1}{\sqrt{9-1}}\right) \right\}$$

$$g(x) = \{(2, \sqrt{5}), (1, \sqrt{8}), (0, 3), (1, \sqrt{8})\}$$

$$\text{ب) } \frac{g}{f} \Rightarrow \left\{ \left(2, \frac{\sqrt{5}}{0}\right), \left(1, \frac{\sqrt{8}}{-4}\right), \left(0, \frac{3}{2}\right), \left(1, \frac{\sqrt{8}}{1}\right) \right\}$$

$$f(x) = \{(2, 1), (3, 4), (-5, 2), (1, -2)\}$$

$$\text{الف) } 2f(x) = \{(2, 2), (3, 8), (-5, 4), (1, -4)\}$$

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

$$\text{ج) } 3f^2(x) + 1 = \{(2, 9), (3, 49), (-5, 25), (1, 9)\}$$

$$\text{د) } f(2x) = \{(1, 1), \left(\frac{3}{2}, 4\right), \left(-\frac{5}{2}, 2\right), \left(\frac{1}{2}, -2\right)\}$$

$$3f^2(x) = \{(2, 9), (3, 16), (-5, 4), (1, 4)\}$$

$$f(2) = 1 \rightarrow 3f^2(2) = 3(1)^2 = 3$$

$$3f^2(2) + 1 = 3 + 1 = 4$$

$$f(x) = \{(2, 3), (1, 2), (1, 4), (3, 1), (5, 2)\}$$

$$g(x) = \{(1, 0), (2, 1), (1, 4), (-2, 3), (3, -1)\}$$

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

$$2f = \{(2, 6), (2, 4), (2, 8), (3, 2), (5, 4)\}$$

$$\text{ب) } \frac{2f}{g} = \left\{ \left(1, \frac{2}{0}\right), \left(2, \frac{4}{1}\right), \left(3, \frac{2}{4}\right) \right\}$$

$$f(2) - g(2) = 3 - 1 = 2$$