

Subject:

Year:

Month:

Date:

تالیف شماره ۲۱

سارینا زارع

دوم اختر

۲۰

$$f(a) = a^2 + 2a = a^2 - 4 \rightarrow 2a = -4 \rightarrow a = -2$$

1

$$g(2) = f + b = 3 \rightarrow b = -1$$

$$f(2) = \frac{f+a}{f-b-1} = 3 \rightarrow f+a = 15 \rightarrow a = 11$$

$$f(x) = \frac{x^2 + 11}{2x + 1} \rightarrow f(1) = \frac{1+11}{2+1} = \frac{12}{3} = 4$$

2

5

$$f(x) = \frac{fx + 1}{2x^2 + ax + b} \rightarrow D_f = \mathbb{R} - \{-1, 2\}$$

3

$$\begin{cases} 2(-1)^2 + a(-1) + b = 0 \rightarrow b = a - 2 \\ 2(2)^2 + a(2) + b = 0 \rightarrow b = -8 - 2a \end{cases} \rightarrow \begin{cases} a - 2 = -8 - 2a \rightarrow -3a = -6 \rightarrow a = 2 \\ b = a - 2 \rightarrow 2 - 2 = 0 = b \end{cases}$$

10

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

$$f(x) = \frac{x^2 - \sqrt{3}}{-fx^2 + ax + b}, D_f = \mathbb{R} - \{-1\}$$

4

15

$$\rightarrow -fx^2 + ax + b = k(x+1)^2 \rightarrow k(x^2 + 2x + 1) = kx^2 + 2kx + k \rightarrow \begin{cases} k = -f \\ a = -1 \\ -f = b \end{cases}$$

$$a + b = -1 - f = -11$$

$$f(x) = \frac{2x}{(x-1)(x^2 + mx + 1)}, D_f = \mathbb{R} - \{1\}$$

5

20

$$\Delta = m^2 - 4 \rightarrow \Delta < 0 \rightarrow m^2 - 4 < 0 \rightarrow -2 < m < 2$$

$$\text{مثال: } 1^2 + m(1) + 1 = 0 \rightarrow m = -2$$

$$\star \cup \star_2 \Rightarrow -2 < m < 2$$

$$f - \frac{1}{x^2} \geq 0 \xrightarrow{\text{تکثیر در } x^2} \frac{fx^2 - 1}{x^2} \geq 0 \rightarrow fx^2 - 1 \geq 0 \rightarrow x^2 \geq \frac{1}{f} \rightarrow x \neq 0$$

$$-\frac{1}{f} \geq x \geq \frac{1}{f} \rightarrow D_f = (-\infty, -\frac{1}{f}] \cup [\frac{1}{f}, +\infty)$$

$$f(x) = \sqrt{mx^2 + 2mx + 1}$$

حالت ۱: $m=0 \rightarrow f(x)=1 \rightarrow D_f = \mathbb{R}$ \star_1

حالت ۲: $m \neq 0 \rightarrow a > 0 \rightarrow m > 0$ \star_2

$$\Delta \leq 0 \rightarrow 4m^2 - 4m \leq 0 \rightarrow 4m(m-1) \leq 0 \rightarrow \left. \begin{matrix} m=0 \\ m=1 \end{matrix} \right\} \text{نقطه ها}$$

$$\star_3 \quad 0 < m \leq 1$$

$$\star_1 \cap \star_2 = 0 < m \leq 1 \quad \star_4 \rightarrow \star_1 \cup \star_4 \Rightarrow \boxed{0 < m \leq 1}$$

$$\frac{fx^2 - 1}{x^2 - 1} = \frac{(2x-1)(2x+1)}{x^2 - 1} = 2x+1 \rightarrow a = \frac{1}{2}$$

$$a+k = \frac{1}{2} + 0 = \frac{1}{2}$$

$$\left. \begin{matrix} f(\frac{1}{2}) = \frac{1}{2} \times \frac{1}{4} + k \Rightarrow \frac{1}{8} + k \\ g(\frac{1}{2}) = \frac{1}{2} \times \frac{1}{4} + 1 = \frac{9}{8} \end{matrix} \right\} \frac{1}{8} + k = \frac{9}{8} \rightarrow k = 1$$

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

$$f(0) = -2, g(0) = b \rightarrow b = -2$$

$$f(-\frac{2}{3}) = -2a+2, g(-\frac{2}{3}) = 3 \times -\frac{2}{3} + b = -2 \rightarrow -2a+2 = -2 \rightarrow a = 3$$

$$g(x) = 4, f(x) = 2a^2 + 2a \rightarrow 2a^2 + 2a = 4 \rightarrow 2a^2 + 2a - 4 = 0$$

$$a^2 + a - 2 = 0 \rightarrow (a+2)(a-1) = 0 \rightarrow a = -2 \text{ or } a = 1$$

به ازای -2 ، a تابع با هم برابرند