

$$f(x) = \begin{cases} x^2 + 2x & : x > a \\ ax - 1 & : x \leq a \end{cases} \Rightarrow a^2 + 2a = a^2 - 1$$

$$\boxed{a = -1}$$

$$f(x) = \frac{x^2 + a}{2x - b} \rightarrow f(1) = 10 \Rightarrow \frac{1 + a}{2(-1) - b} = 10 \rightarrow \frac{1 + a}{-2 - b} = 10 \rightarrow 1 + a = 10(-2 - b)$$

$$\text{II} \quad 1 + a = -20 - 10b$$

$$g(x) = 2x + b \rightarrow (1, 10) \text{ گانه} \Rightarrow g(1) = 10 \rightarrow 2(1) + b = 10$$

$$\text{I} \quad 2 + b = 10 \rightarrow b = 8$$

$$f(1) = \frac{1 + 11}{2 - (-1)} = \frac{12}{3} = \boxed{4}$$

$$f(x) = \frac{2x + 1}{2x^2 + ax + b} \Rightarrow$$

باید $x=1$ باشد $\Rightarrow 2 - a + b = 0 \Rightarrow a = 2 + b \rightarrow a = 2 - 1 = \boxed{-1}$

$$D_f = \mathbb{R} - \{-1, 1\}$$

باید $x=1$ باشد $\Rightarrow 2 + a + b = 0 \rightarrow 2 + (-1) + b = 0 \rightarrow 1 + b = 0 \rightarrow b = -1$

$$f(1) = \frac{2 + 1}{2 - 1 - 1} = \frac{3}{0} = \boxed{\infty}$$

$$f(x) = \frac{x^2 - \sqrt{2}}{-x^2 + ax + b} \quad a + b = -1 + (-1) = \boxed{-2}$$

$$D_f = \mathbb{R} - \{-1\}$$

$$f(x) = -x(x+1)^2 = -x(x^2 + 2x + 1) = -x^3 - 2x^2 - x$$

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

$D_f = \mathbb{R} - \{1\}$

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

$(x-1)^2 \rightarrow x^2 - 2x + 1 \rightarrow m = -2$

$$\boxed{(-2, 2)} = m \text{ ها}$$

1
2
3
4
5
6
7

$$f(x) = \sqrt{k - \frac{1}{x^p}}$$

$$k - \frac{1}{x^p} \geq 0 \rightarrow -\frac{1}{x^p} \geq -k \rightarrow \frac{1}{x^p} \leq k$$

$$D_f = \left[-\frac{1}{k}, \frac{1}{k}\right]$$

$$\frac{1}{x^p} \leq k \rightarrow \frac{1}{k} \leq x^p$$

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

$$mx^p + pmx + 1 \geq 0$$

$$D_f = \mathbb{R}$$

$$m > 0 \rightarrow \Delta \leq 0 \rightarrow b^2 - 4ac \rightarrow (pm)^2 - 4m \leq 0$$

$$pm(m-1) \leq 0 \rightarrow 0 < m \leq 1$$

$m=0 \rightarrow$ شبه-مربع
درجه اول ✓

$$m \leq 1$$

$$f(x) = \begin{cases} \frac{kx^p - 1}{px - 1} & : x \neq \frac{1}{p} \rightarrow a = \frac{1}{p} \\ px - k & : x = \frac{1}{p} \Rightarrow \end{cases}$$

$$a + k \Rightarrow \frac{1}{p} + 0 = \frac{1}{p}$$

$$px - k = \frac{k}{p} - k = \frac{k}{p} + 1$$

$$g(x) = px + 1$$

$$f(x) = \begin{cases} \frac{qx^p - k}{px + p} & : x \neq -\frac{p}{p} \\ px + p & : x = -\frac{p}{p} \end{cases}$$

$$px + p = \frac{q(-\frac{p}{p}) - k}{p(-\frac{p}{p}) + p} = \frac{-q - k}{-p + p} = \frac{-q - k}{0}$$

$$-pa + p = -p + b$$

$$b = p(\nu - a)$$

$$-p = p(\nu - a)$$

$$a = \nu$$

$$g(x) = px + b$$

$$a - b \Rightarrow \nu - (-p) = \boxed{a}$$

$$pa^p + pa = k$$

$$pa(a+1) = k$$

$$a = -\nu, 1$$

$$f(x) = \begin{cases} \frac{x^p - k}{x - \nu} & : x \neq \nu \\ \nu a^p + a^2 & : x = \nu \end{cases}$$

$$g(x) = x + \nu$$

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