

$$x^2 + 19x \xrightarrow{x=a} a^2 + 19a = a^2 - 17 \rightarrow a = -17$$

(1)

$$ax - 17 \xrightarrow{x=a} a^2 - 17$$

$$g(x) = 2x + b \xrightarrow{x=1} 2 + b = 3 \quad b = -1$$

(2)

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

$$f(1) = \frac{11}{2} = 3$$

$$2x^2 + ax + b = 2(x+1)(x-4) = 2x^2 - 6x - 8 \Rightarrow \begin{cases} a = -6 \\ b = -8 \end{cases}$$

(3)

$$f(1) = \frac{2+1}{2-6-8} = -\frac{3}{12}$$

مخرج نباید صفر شود <sup>تنها</sup> پس  $x \neq -1$  ریشه مخرج است

(4)

$$-4x^2 + ax + b = -4(x+1)^2 = -4x^2 - 8x - 4 \rightarrow \begin{cases} a = -8 \\ b = -4 \end{cases}$$

$$a + b = -12$$

$$x^2 + mx + 1 \xrightarrow{\Delta < 0} m^2 - 4 < 0 \rightarrow m = (-2, 2)$$

(5)

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

$$\Rightarrow m = [-2, 2)$$

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

(6)

$$4 - \frac{1}{x^2} \geq 0 \rightarrow 4 \geq \frac{1}{x^2} \rightarrow 4x^2 \geq 1 \rightarrow x^2 \geq \frac{1}{4} \Rightarrow x = \left(-\infty, -\frac{1}{2}\right] \cup \left[\frac{1}{2}, \infty\right)$$

$$x \neq 0$$

$$m x^2 + 2m x + 1$$

$$\Delta \leq 0 \Rightarrow 4m^2 - 4m \leq 0 \Rightarrow 4m(m-1) \leq 0 \Rightarrow \frac{0}{+4-4+} \\ m = [0, 1]$$

$$g(x) = 2\left(\frac{1}{x}\right) + 1 = 2\left(\frac{1}{x}\right) + k \Rightarrow k = 0$$

چون عبارت  $\frac{x^2 - 1}{x - 1}$  به ازای  $x = a$  به قرار نیست یعنی  $a$  شرایط است

$$a = \frac{1}{x} \quad \frac{1}{x} + 0 = \frac{1}{x} \\ k = 0$$

$$\frac{9x^2 - 2}{2x + 2} = 2x + b \Rightarrow \frac{(3x-2)(3x+2)}{2x+2} \Rightarrow b = -2$$

$$g(x) = 2x - 2 \rightarrow x = \frac{2}{3} \rightarrow 2\left(-\frac{2}{3}\right) - 2 = 2a \left(-\frac{2}{3}\right) + 2$$

$$a = 2 \quad a - b = d$$

$$g(x) = x + 2 \rightarrow x = 2 \quad 2 = 2a^2 + 2a \Rightarrow 2a^2 + 2a - 2 = 0$$

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