

$$\begin{cases} x^2 + 2x & ; x \geq a \\ |ax - 2 & ; x < a \end{cases}$$

سوال ۱

$$x = a \rightarrow a^2 + 2a = a^2 - 2 \rightarrow 2a = -2 \rightarrow a = -1$$

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

$$g(x) = 2x + b$$

سوال ۲

$$3 = \frac{f+a}{f-b}$$

$$3 = f + b \rightarrow b = -1$$

$$f(1) = \frac{1+11}{3} = 4$$

$$\rightarrow 1a = 3a \rightarrow a = 11$$

$$R = \{-1, 4\}$$

سوال ۳

$$f(x) = \frac{4x + 1}{2x^2 + 9x + b}$$

دوین نقطه خارج  
صفر است

$$4 + (-1) = 3$$

$$4 \times (-1) = -4$$

$$a = 2 \times 3 = 6$$

$$b = -4 \times 2 = -8$$

$$\rightarrow \text{خارج} = 2x^2 - 4x - 1 = 0 \rightarrow x = -1, 2$$

$$f(x) = \frac{4x + 1}{2x^2 - 4x - 1} \xrightarrow{x=1} \frac{5}{2-4-1} = \frac{-5}{-1}$$

سوال ۴

$$x^3 - \sqrt{3}$$

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

$$-2x^2 + 9x + b$$

$$-(2x+2)^2 \rightarrow -4x^2 - 4 - 1x \rightarrow a = -1, b = -4$$

$$a + b = (-4 + (-1)) = -5$$

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

R-511}

سؤال 5

$a > 0 \rightarrow m = -2$

$m^2 - 4 < 0 \rightarrow m^2 < 4 \rightarrow -2 < m < 2 \rightarrow [-2, 2]$

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

$$\frac{-\frac{1}{2} \neq \frac{1}{2}}{+\phi - \phi - \phi -}$$

سؤال 6

$\frac{x-1}{x^2} \geq 0 \rightarrow \frac{+1}{x^2} \leq x \rightarrow$   
 $\rightarrow \frac{1}{x^2} - x \leq 0 \rightarrow \frac{-x^3 + 1}{x^2} \leq 0 \rightarrow (-\infty, -\frac{1}{3}] \cup [\frac{1}{3}, +\infty)$

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

$a > 0 \rightarrow m > 0 \rightarrow m = 0 \rightarrow 1$  سؤال 7

$\Delta < 0 \rightarrow b^2 - 4ac < 0 \rightarrow$

$\rightarrow km^2 - 4m < 0 \rightarrow m(km - 4)$   $\frac{0}{+} \phi - \phi +$   $\rightarrow [0, 1]$

$m = [0, 1]$

$f(x) = \begin{cases} \frac{kx^2 - 1}{2x - 1} ; x \neq \frac{1}{2} \rightarrow \text{تقریب نسبه } 2x - 1 = 0 \text{ لای } x = \frac{1}{2} \\ kx + k ; x = \frac{1}{2} \end{cases}$  سؤال 8

$a = \frac{1}{2} \leftarrow x \neq \frac{1}{2} \leftarrow$

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

$\rightarrow x = \frac{1}{2} \rightarrow 2 \rightarrow \begin{cases} kx + k = 2 \\ \frac{1}{2} \end{cases} \rightarrow k = 0$

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

$$f(x) = \begin{cases} \frac{ax^2 - \varepsilon}{x + 2} ; x \neq -\frac{2}{a} \\ a(x + 2) ; x = -\frac{2}{a} \end{cases}$$

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

$b = -2$

$x = -\frac{2}{m} \rightarrow -\frac{2}{a}$

سوال 9

$$\frac{ax^2 - \varepsilon}{x + 2} = \frac{(x + 2)(x - 2)}{(x + 2)}$$

$$a(x + 2) = -2 \rightarrow ax + 2 = -2 \rightarrow -2a + 2 = -\varepsilon \rightarrow a = 2$$

$\rightarrow a - b \rightarrow 2 - (-2) = 4$

$$f(x) = \begin{cases} \frac{x^2 - \varepsilon}{x - 2} ; x \neq 2 \\ a(x + 2) ; x = 2 \end{cases}$$

$$g(x) = x + 2$$

$x = 2 \rightarrow 2 + 2 = \varepsilon$

سوال 10

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

$$a = -2, 1$$

$$2a^2 + 2a = \varepsilon \rightarrow 2a(a + 1) = \varepsilon \rightarrow a = 1, a = -2$$

$$2a^2 + 2a - \varepsilon = 0 \rightarrow \frac{-2 \pm \sqrt{4 - 4 \times 2 \times (-\varepsilon)}}{2} \rightarrow -2 \pm \sqrt{2\varepsilon - 2}$$

$\rightarrow -2$

$\rightarrow 1$