

1)  $\frac{x^2-1}{x^2} \geq 0 \rightarrow \frac{x^2-1}{x^2} = 0 \rightarrow x^2-1=0 \rightarrow x^2=1 \rightarrow x = \pm 1$     2)  $x \neq 0$   
 $x^2=0 \rightarrow x=0^*$   
 $\frac{-1}{+} \quad \frac{0}{-} \quad \frac{+1}{+}$   $\rightarrow (-\infty, -\frac{1}{x}] \cup [\frac{1}{x}, \infty)$   $\rightarrow$   $\infty$   $\rightarrow$   $\infty$   
 $\infty \rightarrow \mathbb{R} - (-\frac{1}{x}, \frac{1}{x})$  ✓ (2)

$m^2 + 2m + 1 > 0 \rightarrow \begin{cases} 1) m \geq 0 \\ 2) \Delta < 0 \\ m > 0 \rightarrow \text{نویز}  
 $\frac{m^2-1}{m} \rightarrow \frac{m(m-1)}{m} \rightarrow m-1 \rightarrow m=0$   
 $\frac{m^2-1}{m} \rightarrow \frac{m^2-1}{m} \rightarrow \frac{m(m-1)}{m} \rightarrow m-1 \rightarrow m=0$   
 $\Delta < 0 \rightarrow \frac{m^2-1}{m} \rightarrow \frac{m(m-1)}{m} \rightarrow m-1 \rightarrow m=0$   
 $m \in [1, \infty) \cup \{0\}$   $\rightarrow$   $\frac{1}{+} \quad \frac{-1}{-} \quad \frac{+1}{+} \rightarrow m \in (0, 1]$   
 $\mathbb{R} \setminus (-1, 1) = \mathbb{R} \setminus (-1, 1)$  ✓  $m \in [0, 1]$  ✓$

$a = \frac{1}{x} / x = \frac{1}{x} \rightarrow x + k = x \rightarrow k = 0$   
 $f(x) = g(x)$   
 $a + k = \frac{1}{x} + 0 = \frac{1}{x}$  ✓ (2)  
 دسی و اینده هاسم برابری  
 با  $x = \frac{1}{x}$  داریم با  $x \neq \frac{1}{x}$

$x=1 \rightarrow \frac{9-1}{9} = 1 = 2 + b \rightarrow b = -2 \rightarrow g(x) = 3x - 2$   
 $x = \frac{2}{3} \rightarrow -2a + 2 = -1 \rightarrow -2a = -3 \rightarrow a = \frac{3}{2}$   
 $a - b = \frac{3}{2} - (-2) = \frac{3}{2} + 2 = \frac{7}{2}$  ✓ (2)

$x=2 \rightarrow 2a + 2a = 1 \rightarrow 2a + 2a - 1 = 0 \rightarrow 4a - 1 = 0 \rightarrow 4a = 1 \rightarrow a = \frac{1}{4}$   
 $(a+2)(a-1) = 0$   
 $a = -2 \rightarrow 1 - 2 = -1 \rightarrow x = 2 \rightarrow 1 = 1$   
 $a = +1 \rightarrow 2 + a \rightarrow x = 2 \rightarrow 1 = 1$  ✓ (2)

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

(۲)

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

$$f(x) = \frac{x^2+a}{2x+1} \quad x=2 \rightarrow \frac{4+a}{5} = 3 \rightarrow 4+a = 15 \rightarrow a = 11$$

(۲)

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

$$2x^2 + ax + b = 0 \xrightarrow{x=-1} 2 - a + b = 0 \rightarrow a - b = 2$$

$$\xrightarrow{x=2} 8 + 4a + b = 0 \rightarrow 4a + b = -8$$

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

$$\omega a = -2 \rightarrow a = -1$$

$$b = -1$$

(۲)

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$$-5x^2 + ax + b = 0 \xrightarrow{x=-1} 0 \rightarrow -5(1)^2 = -5x - 1x - 4 \rightarrow b = -5$$

$$a = -8$$

$$a + b = -5 - 8 = -13$$

(۲)

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منظورم این هست که چون  
کمیتر ریشه مخرج (۱) هست پس  
صاحب از  $M(x+1)^2$  دارد و چون  
فردیب  $x^2$  برابر  $M$  هست در معادله  
اصولی برابر  $-1$  است پس  $M = -1$

$$1) \Delta < 0 \rightarrow m^2 - 4 < 0 \rightarrow m^2 < 4 \rightarrow -2 < m < 2 \quad (I)$$

$$2) \Delta = 0, x = -1 \rightarrow m^2 - 4 = 0 \rightarrow m = \pm 2$$

$$\xrightarrow{m=2} x^2 + 2x + 1 = (x+1)^2 = 0$$

$$\xrightarrow{m=-2} x^2 - 2x + 1 = (x-1)^2 = 0$$

$$(I) \cup (II) \Rightarrow -2 < m < 2$$

$$(I) \cup (II) \rightarrow -2 < m < 2$$

(۲)

$$(۲) x^2 + mx + 1 \rightarrow x = 1 \rightarrow 1 + m + 1 = 0 \rightarrow m = -2$$

$$\begin{cases} \Delta = 0 \\ x = \frac{-b}{2a} = 1 \end{cases} \rightarrow m^2 - 4 = 0 \rightarrow m = \pm 2, x = \frac{-m}{2} = 1 \rightarrow m = -2 \quad (II)$$