

$$x^2 - ax + b \in \rightarrow \begin{array}{c} 1 \\ + \end{array} \begin{array}{c} 3 \\ - \end{array} \Rightarrow x=1 \Rightarrow 1-a+b=0 \Rightarrow 4-2b=0 \Rightarrow b=2 \Rightarrow a=4$$

$$\begin{array}{c} + \\ - \end{array} \begin{array}{c} 0 \\ 0 \end{array} \Rightarrow x=3 \Rightarrow 9-3a+b=0 \Rightarrow a+b=7$$

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$$y = ((k-2)x + m - 1) (x - 3h)^2$$

$$\begin{array}{c} -1 \\ + \end{array} \begin{array}{c} 4 \\ + \end{array} \begin{array}{c} | \\ - \end{array} \begin{array}{c} x=4 \Rightarrow (k-2)x + m - 1 = 0 \\ 4k - 8 + m - 1 = 0 \\ m = 4k + 9 \end{array}$$

$$\rightarrow x = -1 \Rightarrow x - 3h = 0 \Rightarrow -1 - 3h = 0 \Rightarrow h = -\frac{1}{3}$$

$$x = \omega \Rightarrow (k-2)x + m - 1 < 0 \Rightarrow \omega k - 1 + m - 1 < 0$$

$$\Rightarrow \omega k + m < 2 \Rightarrow k + 9 < 2 \Rightarrow k < -7 \Rightarrow k = 1 \Rightarrow m = \omega$$

$$m = 9 - 4k \rightarrow \frac{m}{h} + k \Rightarrow \frac{\omega}{-\frac{1}{3}} + 1 = -3\omega + 1 = -14$$

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$$\frac{1}{2}x^2 + 2x + 4 > \frac{1}{2} \Rightarrow \frac{1}{2}x^2 + 2x + \frac{7}{2} > 0 \Rightarrow x = \frac{-2 \pm \sqrt{4+7}}{1} = -1, -\omega \Rightarrow \begin{array}{c} -\omega \\ -4 \end{array} \begin{array}{c} + \\ + \end{array} \begin{array}{c} 1 \\ - \end{array}$$

$$(a, b) = (-\omega, 1) \Rightarrow b - a = 4$$

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

$$\begin{array}{c} -1 \\ - \end{array} \begin{array}{c} 1 \\ + \end{array} \begin{array}{c} 3 \\ - \end{array} \rightarrow (a, b) = (1, 3) \rightarrow \text{نقطه میان } \bullet \rightarrow f(x) = 1 - 12 - 2 + 3 = -10$$

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$$y = (a-1)x^2 + (a-1)x + 1 \rightarrow \max(a, 1) \rightarrow a-1 < 0 \Rightarrow a < 1 \text{ (I)}$$

$$\Delta < 0 \rightarrow b^2 - 4ac < 0 \Rightarrow a^2 + 1 - 2a - 4a + 4 < 0 \Rightarrow a^2 - 6a + 5 < 0 \Rightarrow (a-1)(a-5) < 0$$

$$\frac{1}{+} \begin{array}{c} \omega \\ - \end{array} \begin{array}{c} + \\ + \end{array} \rightarrow a = (1, \omega) \quad \text{I} \cap \text{II} = \emptyset$$

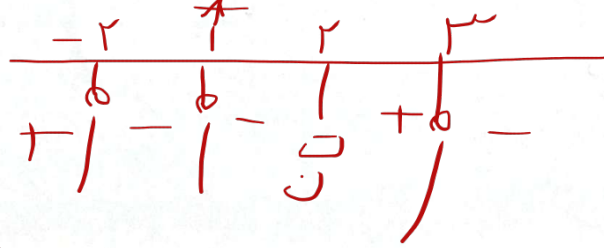
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$$\frac{m(m^2+m)}{m-2} = \frac{m^2+m^3}{m-2} \xrightarrow{\text{مضروب } +0} \text{مضروب } = 2 \Rightarrow \frac{2}{-} \begin{array}{c} + \\ + \end{array} \rightarrow m = (2, +\infty)$$

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$$\frac{(x^2-x-4)(x-1)^2}{(x^2+x+1)(2-x)^2} \leq 0 \quad \frac{(x-3)(x+2)(x-1)^2}{(x^2+x+1)(2-x)^2} \leq 0$$

$$x = (-\infty, -2] \cup (2, 3]$$



$$[-2, 2) \cup [3, +\infty)$$

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$$f(x) = \frac{3x^2 - 2x}{x^2 + 4} < 2 \rightarrow \frac{x^2 - 2x - 8}{x^2 + 4} < 0 \rightarrow x^2 - 2x - 8 < 0 \Rightarrow (x - 4)(x + 2) < 0$$

صوابه مثبت ← $x^2 + 4$

$$(a, b) = (-2, 4) \Rightarrow b - a = 6$$

	-2	4	
+		-	+

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$$-1 < \frac{3x^2 - 4x}{x + 1} < 0 \rightarrow \frac{x(3x - 4)}{x + 1} < 0$$

صوابه +

$$\frac{3x^2 - 4x}{x + 1} < -1 \Rightarrow \frac{3x^2 - 3x + 1}{x + 1} < 0$$

-1	0	4/3	
-	+	-	+

$x = (-\infty, -1) \cup (0, \frac{4}{3})$

-1			
-	+	+	+

$x = (-1, +\infty) \rightarrow x = (0, \frac{4}{3})$

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$$\frac{x^2 - 10}{x} \leq 2 \Rightarrow \frac{x^2 - 3x - 10}{x} \leq 0 \Rightarrow \frac{(x - 5)(x + 2)}{x} \leq 0$$

-2	0	5	
-	+	-	+

$$x = (-\infty, 2] \cup (0, 5)$$