

کتاب ضروری

$$x^2 - ax + b \rightarrow a(x-1)(x-3) \rightarrow a-1 \rightarrow x^2 \quad (1)$$

$$a=4 \quad b=3 \Rightarrow x^2 - 4x + 3 \Rightarrow a+b=7$$

$$y = ((k-2)x + m-1)(x-3n)^2 \quad (2)$$

$$\rightarrow 1 = \text{ریشه مضاعف } x \rightarrow -1-3n=0 \Rightarrow 3n=-1 \rightarrow n=-\frac{1}{3}$$

ریشه عبارت $\Rightarrow 4 \rightarrow k-2 < 0 \Rightarrow k < 2 \Rightarrow k=1$
 درجه یک \leftarrow چون طبیعی

$$(ax+b) \rightarrow (x+m-1) \Rightarrow 4 \text{ ریشه}$$

$$\frac{m}{n} + k = \frac{d}{-\frac{1}{3}} + 1 = -14 \quad -4-m-1=0 \quad m=d$$

$$y = \frac{-1}{4}x^2 + 2x + 4 > \frac{v}{p} \quad (3)$$

$$y > \frac{v}{p}$$

$$x-2 \left(-\frac{1}{4}x^2 + 2x + 4, d > 0 \right)$$

$$x^2 - 4x - d < 0 \rightarrow (x-d)(x+1) < 0$$

$$-1 < x < d$$

$$(-1, d) \quad b-a = d - (-1) = [4]$$

$$x^2(x-3) - (x-3) \rightarrow (x^2-1)(x-3) = (x-1)(x+1)(x-3) \quad (4)$$

$$\begin{array}{c|c|c|c} -1 & 1 & 3 & \\ \hline - & + & - & + \end{array}$$

$$\left. \begin{array}{l} x > 0 \\ f(x) < 0 \end{array} \right\} \Rightarrow (1, 3)$$

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

$$[-3]$$

$$\text{نقطه میانی} = \frac{1+3}{2} = 2$$

PASARGAD

DATE:

$$(a-1)x^2 + (a-1)x + 1 < 0 \quad (a)$$

$$\begin{cases} a-1 < 0 \rightarrow a < 1 & (1) \end{cases} \quad (1) \rightarrow$$

$$\begin{cases} \Delta < 0 \rightarrow (a-1)^2 - 4(a-1) = (a-1)(a-5) < 0 \rightarrow \frac{1}{-} \frac{a}{+} \end{cases}$$

$$\rightarrow (1) \wedge (2) = \boxed{\emptyset}$$

$$\frac{m(m^2+m)}{m-2} > 0 \rightarrow \frac{m^2(m^2+1)}{m-2} > 0 \quad \begin{matrix} \text{مضروب} \\ \text{مضروب} \end{matrix}$$

$$\begin{matrix} + & - & + \\ - & - & + \end{matrix} \quad (2) \rightarrow \infty$$

$$\frac{(x^2-x-9)(x-1)^2}{(x^2+x+1)(2-x)^2} < 0 \rightarrow \frac{(x-3)(x+2)(x-1)^2}{(x^2+x+1)(2-x)^2} < 0$$

$$\begin{matrix} - & + & - & + \\ - & + & - & + \end{matrix}$$

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

$$\frac{(x-3)(x+2)(x-1)^2}{(x^2+x+1)(2-x)^2} > 0$$

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

$$x^2-2x-8 < 0 \quad (x-4)(x+2) < 0$$

$$\begin{matrix} - & + \\ + & - \end{matrix} \rightarrow (-2, 4)$$

$$b-a = 4 - (-2) = \boxed{6}$$

کیا نامزد ہوگی

9

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

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

-	0	4/3	+
-	+	-	+

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

$$\textcircled{2} -1 < \frac{3x^2 - 4x}{x+1} \rightarrow \frac{3x^2 - 4x + x + 1}{x+1} > 0 \xrightarrow{\text{شماره مثبت}} \rightarrow x+1 > 0 \quad x > -1$$

(-1, +\infty)

$$\textcircled{1} \cap \textcircled{2} \rightarrow \boxed{(0, \frac{4}{3})}$$

10

$$\frac{x^2 - 10}{x} \geq 0 \rightarrow \frac{x^2 - 3x - 10}{x} \geq 0 \quad \frac{(x-5)(x+2)}{x} \geq 0$$

-	0	5	+
-	+	-	+

$$\rightarrow \boxed{(-\infty, -2] \cup (0, 5]}$$