۱۹,۲۵

$y = x^2 - ax + b$

	1		2	
	+	−		+

(۳)

(۱)

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

-۱۰

x^2 مثبت $\rightarrow$ ⊕ x^2 $\rightarrow$ $k-2<0 \rightarrow k<2$ $\rightarrow k=1$

(۵)

$((k-2)x + m-1)(x-2n) = 0$

$x=2n$ $\quad$ $x=\frac{1-m}{k-2}$

$-1 = \frac{1-m}{k-2}$

	1		2	
	+	+		−

$-1-2n=0$ $\quad$ $n=-\frac{1}{2}$

$\frac{a}{-1} + 1 = -\frac{1}{2}$

$(k-2)x + m - 1 = 0 \rightarrow 4k - 8 + 4m - 1 = 0$

$4k = 9 - 4m$

$k = \frac{9-4m}{4}$ $\rightarrow$ ...

$\frac{9-m}{4}$ $\rightarrow$ ✓ $m=3$, $k=1$ $\quad$ $m=1$, $k=2$

$y = -\frac{1}{2}x^2 + 2x + 4$ $\quad$ $\Delta = 4 + 12 = 16$ (۲)

$x_{1,2} = \frac{-2 \pm 4}{-1} \Rightarrow -2, +4$

	$-\frac{4}{3}$		$+4$	
	+	−		+

$-\frac{1}{2}x^2 + 2x + 4 > \frac{7}{2}$

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

$\Delta = 4 + 4 = 8$

$\frac{-2 \pm 2}{-1} = -1, \frac{3}{2}$

	-1		3	
	+			−

$(-1, 3) = (a, b)$ (۳)

$b - a = 4$

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

$x^3-2x^2-x+2<0 \rightarrow x(x^2-1)-2(x^2-1)=$

$(x-2)(x^2-1)<0$

$x\neq 2$ $\quad (1,2)$

$x=-1,1$ $\quad 2=$ تعداد

$f(x)=8-12-2+3=-3$

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

** استثنا $\rightarrow \emptyset$

$-0,62$

$\Delta<0 \rightarrow (a-1)^2-4a+4<0$

$a-1<0$

$a<1$ * $\quad a^2+1-2a-4a+4<0$

$a^2-6a+5<0 \rightarrow (a-1)(a-5)<0$

	1	5	*
	+	-	+

$1<a<5$

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

	*0	2	
	+	-	+

$m>2$

$$\frac{(x-2)(x+2)}{(x^2-x-6)(x+1)^2} \leq 0$$

$$\frac{(x^2+x+1)(2-x)^2}{+\text{همیشه}+}$$

۳

	-2	1	2	3
	+	−	−	+

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

۴

$f(x) = \frac{3x^2 - 2x^3}{x^2 + 4}$ $\quad (a, b) \rightarrow$ کوچکترین

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

$$\frac{-2x^3 + 3x^2 - 2x - 8}{x^2+4} < 0 \qquad \frac{(x-4)(x+2)}{x^2+4} \quad 4, -2$$

	-2	4
	+	−	+

$$(-2, 4) = (a, b)$$

$$b - a = 6$$

۵) $1, 2, 3$

$$\Delta = 9 - 12 = -3$$

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

$$\frac{x^3 - 4x}{x+1} + 1 > 0 \rightarrow \frac{x^3 - 4x + x + 1}{x+1} > 0$$

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

$$\Delta < 0$$

$$x > -1$$

$$-1$$

	-1	0	$\frac{4}{3}$
	−	+	−	+

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

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

$$(0, \tfrac{4}{3}) \cap \mathbb{Z} = \{1\}$$

$$\frac{x^2-10}{x} \leq 3 \qquad \frac{x^2-3x-10}{x} \leq 0$$

$$\frac{(x-5)(x+2)}{x} \leq 0$$

	$-\infty$		-2		0		5		∞
$x-5$	$-$	$\|$	$-$	$\|$	$-$	$\|$	0	$+$	
$x+2$	$-$	$\|$	0	$+$	$+$	$\|$	$+$	$+$	
x	$-$	$\|$	$-$	$\|$	0	$+$	$+$	$+$	
$\frac{(x-5)(x+2)}{x}$	$-$	$\|$	0	$+$	$\|$	$-$	0	$+$	

$$(-\infty, -2] \cup (0, 5]$$