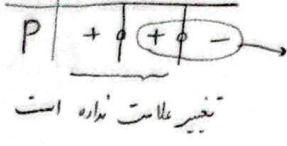


ریشه‌ها: 1, 3 $\Rightarrow y = m(x-1)(x-3) = x^2 - \frac{4}{a}x + \frac{3}{b}$ $a+b = 4+3 = \frac{7}{b}$

سوال (۱)

ریشه‌ی مضامین $\rightarrow (x-3)^2$ ریشه $\xrightarrow{x=-1} -1-3n=0 \rightarrow n = -\frac{1}{3}$

سوال (۲)

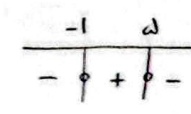


تغییر علامت ندارد است $y = ax + b \rightarrow a < 0$
 $K-2 < 0$
 $K < 2 \xrightarrow{K \in \mathbb{N}} K=1$
 $\xrightarrow{x=3} (1-2)(3) + m-1 = 0$
 $m = 4$

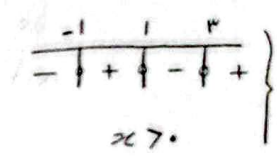
$\frac{m}{n} + k = \frac{4}{-\frac{1}{3}} + 1 = -12 + 1 = -11$

$-\frac{1}{y}x^2 + 2x + 4 > \frac{7}{y} \rightarrow -\frac{1}{y}x^2 + 2x + \frac{4}{y} > 0 \rightarrow -x^2 + 4x + d > 0$
 $a+c = b \rightarrow -1 + d = 7 \rightarrow d = 8$
 $(a, b) = (-1, 8) \rightarrow b-a = 8 - (-1) = 9$

سوال (۳)

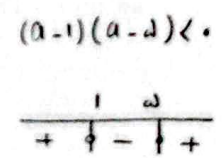


$f(x) = x^3 - 3x^2 - 2x + 3 \rightarrow x^2(x-3) - 1(x-3) = (x-3)(x^2-1)$
 ریشه‌ها: 1, -1, 3
 نقطه یابی: $\frac{1+3}{y} = 2 \rightarrow f(x) = 2^3 - 2(2^2) - (2) + 3 = -3$



سوال (۴) $(a, b) = (1, 3)$

x^2 ضرب $\rightarrow a-1 < 0$
 $a < 1$
 $\Delta < 0 \rightarrow (a-1)^2 - 4(a-1) < 0$
 $(a-1)(a-1-4) < 0$
 $(a-1)(a-5) < 0$



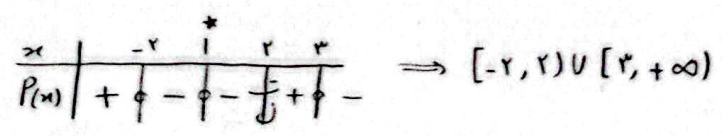
سوال (۵) $(1, 5)$

$(-\infty, 1) \cap (1, 5) = \emptyset$

$\Delta = 0 - 4 < 0$
 $\frac{m \cdot m(m^2+1)}{m-2} > 0$
 $\frac{m^3 + m^2 - 2m}{m-2} > 0$
 $\frac{m(m^2+1-2)}{m-2} > 0$
 $\frac{m(m-1)}{m-2} > 0$
 $(2, +\infty)$

سوال (۶)

$\frac{(x-2)(x+2)(x-1)^2}{(x^2+x+1)(2-x)^2} \leq 0$
 $\Delta < 0$
 $a > 0$



سوال (۷) $[-2, 2) \cup [2, +\infty)$

