شمارهٔ تکلیف ۲۶ - دهم پسر A

پارسا ضیائی

Subject: Date

۱- $x^2-ax+b \to (x-1)(x-3)=x^2-4x+3$

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

۲- $(x-3n)^2=(x+1)^2 \Rightarrow -3n=1 \Rightarrow n=\frac{-1}{3}$

$k-2<0 \Rightarrow k<2,\ k\in N \Rightarrow k=1 \to y=(-x+m-1)(x+1)^2$

$-x+m-1 \xrightarrow{x=4} -x+m-1=0 \Rightarrow -4+m-1=0 \Rightarrow m=5$

$\frac{m}{n}+k=\frac{5}{\frac{-1}{3}}+1 \Rightarrow -15+1=-14$

۳- $y=-\frac{1}{2}x^2+2x+6>\frac{7}{2}\ \xrightarrow{\times 2}\ -x^2+4x+12>7$

$\Rightarrow x^2-4x-5<0 \Rightarrow (x-5)(x+1)<0$ $\quad a=-1 \quad b=5$ $\quad 5-(-1)=6$

۴- $f(x)=x^3-3x^2-x+3$ $\quad x>0$ $\quad f(x)<0 \to$ جمع ضرایب صفر $\to x=1$ یکی از ریشه‌ها

$$\begin{array}{l|l} x^3-3x^2-x+3 & x-1 \\ \hline -x^3+x^2 & x^2-2x-3 \\ -2x^2-x & \\ +2x^2-2x & \\ -3x+3 & \end{array}$$

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

$-1 \quad 1 \quad 3$

$-\phi \ + \phi \ - \phi +$ $\to f(x)<0$

$\Rightarrow x=(-\infty,-1)\cup(1,3)$ و $x>0 \Leftarrow x=(1,3) \to$ وسط بازه $\to 2$

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

۵- $(a-1)x^2+(a-1)x+1 \to a-1<0 \Rightarrow a<1$

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

$1 \quad 5$

$+\phi - \phi +$

$a<1 \cap a=(1,5)=\phi$

Subject: Date . .

۶-

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

0^* 2

$-\ \phi\ -\ \phi\ +$

$m = (2, +\infty)$

۷-

$$\frac{(x^2-x-6)(x-1)^2}{(x^2+x+1)(2-x)^3} \leq 0 \Longrightarrow \frac{(x-3)(x+2)(x-1)^2}{(x^2+x+1)(2-x)^3} \leq 0$$

$\Delta < 0 \rightarrow$ همیشه مثبت

-2 1^* 2 3

$+\ \phi\ -\ \phi\ -\ \nexists\ +\ \phi\ -$

$\rightarrow x = [-2, 2] \cup [3, +\infty)$

۸-

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

$$\frac{x^2-2x-8}{x^2+4} < 0 \Longrightarrow \frac{(x-4)(x+2)}{x^2+4} < 0$$

-2 4

$+\ \phi\ -\ \phi\ +$

$\Rightarrow x = (-2, 4)$

$4-(-2) = 6$ a b

۹-

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

$$0 < \frac{3x^2-4x+x+1}{x+1} = \frac{3x^2-3x+1}{x+1} > 0 \quad \Delta < 0.$$

-1

$-\ \nexists\ +$

$\Rightarrow x > -1$

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

-1 0 $\frac{4}{3}$

$-\ \nexists\ +\ \phi\ -\ \phi\ +$

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

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

۱۰-

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

-2 0 5

$-\ \phi\ +\ \nexists\ -\ \phi\ +$

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

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