دهم بیر B   تکلیف ۲۶   سروش اخوان

۲۰

Subject:
Date

۱-

$1-a+b=0 \quad , \quad 9-3a+b=0$

$a+b=4+3=7$ ✓ ۲

$\Rightarrow -8+2a=0 \Rightarrow a=4 , b=3$

۲-

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

$(k-2)x+m-1 \xrightarrow{x=4} 4k-8+m-1=0 \Rightarrow 4k+m=9 \xRightarrow{k=1} m=5$

$\frac{m}{n}+k=\frac{5}{\frac{-1}{3}}+1=-14$ ✓ ۲

۳-

$y=-\frac{1}{2}x^2+2x+6>\frac{7}{2} \Rightarrow y=-\frac{1}{2}x^2+2x+\frac{5}{2}>0$

$\Rightarrow x=\frac{-2\pm\sqrt{4+5}}{-1}=5,-1 \Rightarrow$ — (−1) + (5) — ۲

$b-a=5-(-1)=6$ ✓

۴-

$x^3-3x^2-x+3 \mid x-1$ → x^2-2x-3

$-x^3+x^2$

$-2x^2-x$

$+2x^2-2x$

$-3x+3$

$+3x-3$

0

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

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

— (−1) + (1) — (3) +

$\Rightarrow (a,b)=(1,3)$ → میانگین $\frac{1+3}{2}=2$ ۲

$f(2)=8-12-2+3=-3$ ✓

۵-

$\Delta<0 \quad a^2+1-2a-4a+4<0 \Rightarrow a^2-6a+5<0 \Rightarrow (a-1)(a-5)<0$ ۲

+ (1) − (5) +

$\Rightarrow a=(1,5)$

$\Rightarrow \varnothing$ مجموعه ✓

مثبت منفی $\Rightarrow (-\infty,1)$

۶-

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

$\Rightarrow m=(2,+\infty)$ ✓ ۲

PAPCO

Subject :

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

$\Delta < 0$

$\Rightarrow$

x	-2		-1		2		3
	+	0	−	0	−	∄	+ 0 −

$\Rightarrow x \in [-2,1] \cup [1,2) \cup [3,+\infty) = [-2,2) \cup [3,+\infty)$ ✓ (۲)

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

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

$\Delta < 0 \leftarrow (x^2+x+2)$

x	-2		2
	+	0 −	∄ +

$\rightarrow (-2,2)$ (۲)

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

۹- $-1 < \frac{3x^2-4x}{x+1} \Rightarrow \frac{3x^2-4x+x+1}{x+1} > 0$

$\Delta < 0$

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

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

x	-1		0		$\frac{4}{3}$
	∄ +		0 −		0 +

$\Rightarrow x \in (-\infty,-1) \cup (0,\frac{4}{3})$ (۲)

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

۱۰- $\frac{x^2-10}{x} - 6 < 0 \Rightarrow \frac{x^2-6x-10}{x} < 0 \Rightarrow \frac{(x-5)(x+2)}{x} < 0$

x	-2		0		5
	− 0	+	∄ −	+	0 −

$\Rightarrow x \in (-\infty,-2] \cup (0,5]$ (۲) ✓