SAT ☐ SUN ☐ MON ☐ TUE ☐ WED ☐ THU ☐ FRI ☐ NOTEBOOK

۱۴/۷۵

آنا تشرعی

۱ - (۳)

$a+b=?$

$x^2 - ax + b$ (a → ۴, b → ۳)

$(x-3)(x-1)$

$a+b = 4+3 = 7$

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۲ - (۳)

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

$\frac{m}{n} + k = ?$

$\frac{5}{\frac{-1}{3}} + 1 = -15 + 1 = -14$

$(-1 - 3n)^2 = 0$

$-1 - 3n = 0$

$-1 = 3n \rightarrow n = \frac{-1}{3}$

چون علامت عوض نشده

$y = (k-2)(x-4)(x+1)$

$((k-2)4 + m - 1) = 0$

$x=5$ باید یکی باشه $\rightarrow k=1$

$\rightarrow 5k + m - 11 \times 36 < 0$

$(k + 9 - 11) < 0$

$k - 2 < 0$

$k < 2$

$4k - 8 + m - 1 = 0$

$4k - 9 + m = 0$

$4k + m = 9$

$\rightarrow m = 5$

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۳ - (۵)

$y = \frac{-1}{2}x^2 + 2x + 6 \rightarrow \times -2$

$x^2 - 4x - 12 = 0$

$(x-6)(x+2) = 0$

$-\frac{1}{2}x^2 + 2x + 6 > \frac{7}{2}$

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

$\frac{-2 \pm \sqrt{4 + \frac{4}{4}}}{2 \times \frac{-1}{2}}$ → $2+\sqrt{5}$ / $2-\sqrt{5}$

$(a, b) \rightarrow b - a = 2\sqrt{5}$

$y > \frac{7}{2} \rightarrow \frac{-1}{2}x^2 + 2x + 6 > \frac{7}{2} \xrightarrow{\times(-2)} x^2 - 4x - 12 < -7$

$x^2 - 4x - 5 < 0 \quad (x-5)(x+1) < 0$

$-1 < x < 5$

$b - a = 6$

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۴ - (۲)

$f(x) = x^3 - 3x^2 - x + 3 \quad x > 0$

$\rightarrow (x-1)(x+1)(x-3)$

(a, b): a → ۱, b → ۳

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

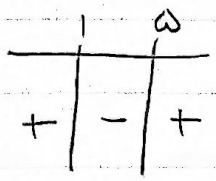
نقطه میانی $\frac{1+3}{2} = 2$

$(a-1)x^2 + (a+1)x + 1 < 0$ — ۵، ۷، ۵ — ۸

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

$a^2-6a+5<0$

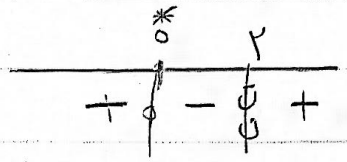
$(a-1)(a-5)<0$



$(1,5)$ I

$a-1<0 \rightarrow a<1$ II $\quad$ I ∩ II = ∅

$\frac{m(m^3+m)}{m-2} > 0$ — ۴ —



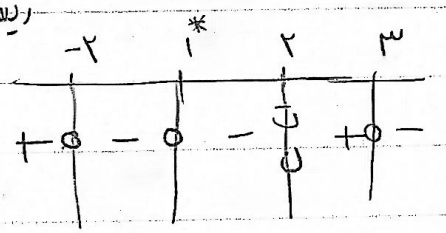
$\frac{m^4+m^2}{m-2} = \frac{m^2(m^2+1)}{m-2}$ — ۲

$(2,+\infty)$

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

$\frac{(x-3)(x+2)(x-1)^2}{(x^2+x+1)(2-x)^3} \leq 0$ — ۲

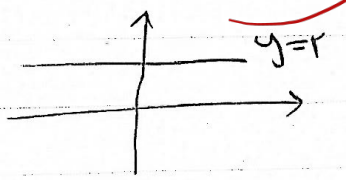
$\Delta<0$



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

$f(x) = \frac{3x^2-2x}{2x^2+4}$ $\quad$ max $b-a=?$ — ۱ — ۲

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



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

$(-2,4) \rightarrow 4-(-2) = 6$

۹-

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

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

x	-1	
	$-$ ‖ $+$	

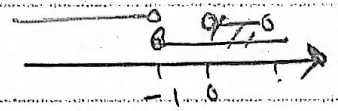
$\rightarrow (-1, +\infty)$

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

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

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

اشتراک‌گیری:



$\rightarrow (0, \frac{4}{3})$

۲

۱۰-

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

۲

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

x	-2	0	5
	$-$ 0 $+$	‖ $-$	0 $+$

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