نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲۷ کلاس .....

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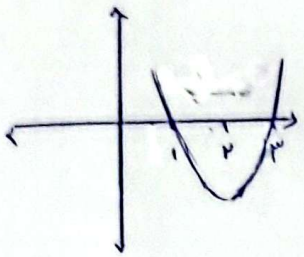
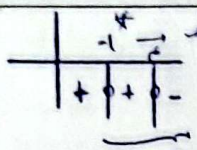


$x^2 - sx + p$ ریشه‌ها: $1, 3 \rightarrow (x-1)(x-3) = x^2 - 4x + 3$

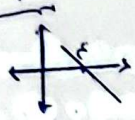
$x^2 - ax + b$

$\rightarrow a+b = 4+3 = 7$

۲



$\rightarrow$ نقاط $\rightarrow (x-3)^2 \quad x=-1 \rightarrow -1-3m=0 \rightarrow m=-\frac{1}{3}$



$y = ax+b \rightarrow a<0 \rightarrow k-2<0 \rightarrow k<2 \xrightarrow{k\in W} k=1$

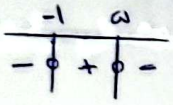
$x=4 \rightarrow (1-2)(4)+m-1=0 \rightarrow m=3$

$\frac{m}{n}+k = \frac{3}{-\frac{1}{2}}+1 = -5$

۳

$-\frac{1}{2}x^2+2x+4 > \frac{7}{2} \rightarrow -\frac{1}{2}x^2+2x+4-\frac{7}{2}>0 \rightarrow -\frac{1}{2}x^2+2x+\frac{3}{2}>0$

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



$>0 \rightarrow (-1, 3) \rightarrow b-a = 3-(-1) = 4$

۴

$x>0, y<0, P(x) = x^3-3x^2-x+3 \rightarrow (a,b)$

$x=0 \rightarrow 3$

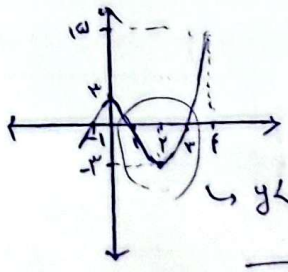
$x=1 \rightarrow 1-3-1+3=0$

$x=2 \rightarrow 8-12-2+3=-3$

$x=3 \rightarrow 27-27-3+3=0$

$x=4 \rightarrow 64-48-4+3=15$

$x=-1 \rightarrow -1-3+1+3=0$



$\hookrightarrow y<0, x>0 \rightarrow (1,3) \rightarrow$ تقاطعی: ۲

$\rightarrow x=2 \Rightarrow f=-3$ ✓

۵

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

$a<0 \rightarrow a-1<0 \rightarrow a<1 \rightarrow$ ج.ر $= (-\infty, 1)$ ①

$\Delta<0 \rightarrow (a-1)^2-4(a-1)(1)<0 \rightarrow a^2-2a+3<0 \rightarrow (a-3)(a-1)<0 \rightarrow (1,3)$ ②

$\hookrightarrow$ $\begin{array}{c|ccc} & 1 & & 3 \\ \hline & + & 0 & - \end{array}$

①, ② $\rightarrow \emptyset \rightarrow a \in \emptyset$

۶

$$\frac{m^2(m^2+1)}{m-2} > 0 \rightarrow \begin{array}{c|ccc} & 0 & 2 \\ \hline - & \phi & + \end{array} \rightarrow m \in (2, +\infty)$$

۷

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

عبارت مثبت

	-2	1	2	3
$(x-3)$	$-$	$-$	$-$	ϕ $+$
$(x-1)^2$	$+$	$+$	$+$	$+$
$(x-2)^3$	$-$	$-$	ϕ $+$	$+$
(x^2+x+1)	$+$	$+$	$+$	$+$
حاصل	$-$	$-$	ϕ $+$	ϕ $-$

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

۸

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

$$\rightarrow \frac{(x-4)(x+1)}{x^2+2} < 0 \rightarrow \begin{array}{c|ccc} & -1 & 4 \\ \hline + & \phi & - & \phi & + \end{array} \rightarrow (-1, 4) \rightarrow b-a = 4-(-1) = 5$$

(a, b)

۹

$$\frac{3x^2-2x}{x+1} > -1 \rightarrow \frac{3x^2-2x}{x+1} + 1 > 0 \rightarrow \frac{3x^2-2x+x+1}{x+1} > 0$$

$$\rightarrow \frac{3x^2-x+1}{x+1} > 0 \rightarrow \begin{array}{c|cc} & -1 \\ \hline - & \phi & + \end{array} \rightarrow (-1, +\infty) \quad ①$$

$$\frac{3x^2-2x}{x+1} < 0 \rightarrow \frac{x(3x-2)}{x+1} < 0 \rightarrow \begin{array}{c|ccc} & -1 & 0 & \frac{2}{3} \\ \hline + & \phi & - & \phi & + \end{array} \rightarrow (-\infty, -1) \cup (0, \tfrac{2}{3}) \quad ②$$

$① \cap ② \rightarrow (0, \frac{2}{3})$ ✓

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$$\frac{x^2-10}{x} - 3 < 0 \rightarrow \frac{x^2-3x-10}{x} \leq 0 \rightarrow \frac{(x-5)(x+2)}{x} \leq 0 \rightarrow \begin{array}{c|ccc} & -2 & 0 & 5 \\ \hline - & \phi & + & \phi & - \end{array}$$

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