۱۴٫۷۵

نام و نام خانوادگی ......عرفان پیرزادی...... پاسخنامه تشریحی تکلیف شماره ۲۴...... کلاس ......دهم......

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الف) $min \rightarrow ext \left| \begin{array}{l} \frac{-b}{2a} \rightarrow \frac{4}{4} = 1 \\ \frac{-\Delta}{4a} \rightarrow \frac{-8}{8} = -1 \end{array} \right. \rightarrow ext \left| \begin{array}{l} 1 \\ -1 \end{array} \right.$ ✓

(۲)

ب) $max \rightarrow ext \left| \begin{array}{l} \frac{-b}{2a} \rightarrow \frac{-3}{-4} = \frac{3}{4} \\ \frac{-\Delta}{4a} \rightarrow \frac{31}{-8} \end{array} \right. \rightarrow ext \left| \begin{array}{l} \frac{3}{4} \\ \frac{-31}{8} \end{array} \right.$ ✓

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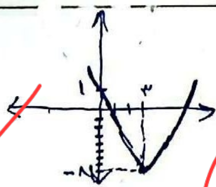
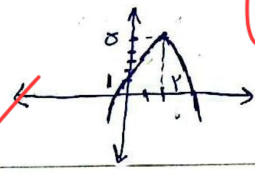
الف) $x_s = \frac{-b}{2a} = \frac{6}{2} = 3 \;,\; y_s = \frac{-\Delta}{4a} = \frac{-32}{4} = -8$
$x=0 \rightarrow y=1 \;,\; min$ $\Bigg\} \Rightarrow$ ✓



(۲)

ب) $x_s = \frac{-b}{2a} = \frac{-4}{-2} = 2 \;,\; y_s = \frac{-\Delta}{4a} = \frac{-20}{-4} = 5$
$x=0 \rightarrow y=1 \;,\; max$ $\Bigg\} \Rightarrow$ ✓



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$x^2 - (\alpha+\beta)x + \alpha\beta \rightarrow x^2 - 1x - 2 \rightarrow x^2 - x - 2$

$4x^3 + kx^2 - 9x - 2 \xrightarrow[\text{پذیر}]{\text{باید بخش}} x^2 - x - 2 \xrightarrow{\div} 4x + (k+4) \rightarrow k+4 = 1$

$\Rightarrow k = -3$ ✓

(۲)

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$|x_1 - x_2| = \frac{\sqrt{\Delta}}{|a|} \;,\; \Delta = b^2 - 4ac \rightarrow \Delta = (-3m)^2 - 4(1)(m) = 9m^2 - 4m$

$\frac{\sqrt{9m^2-4m}}{1} = 1 \rightarrow \sqrt{9m^2-4m} = 1 \rightarrow 9m^2 - 4m = 1 \rightarrow 9m^2 - 4m - 1 = 0 \rightarrow \Delta = (-4)^2 - 4(9)(-1) =$

(۱)

$16 + 36 = 52 \rightarrow m = \frac{4 \pm \sqrt{52}}{18} \rightarrow \sqrt{52} = 2\sqrt{13} \rightarrow m = \frac{4 \pm 2\sqrt{13}}{18} = \frac{2 \pm \sqrt{13}}{9}$

$2x^2 - mx - m = 0 \;,\; x_1x_2 = \frac{c}{a} = \frac{-m}{2} = -\frac{2+\sqrt{13}}{18} \;,\; m = \frac{2-\sqrt{13}}{9} \;,\; \boxed{x_1x_2 = -\frac{2-\sqrt{13}}{18}}$

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$y = x^2 + x + 1 \rightarrow x_s = \frac{-b}{2a} = \frac{-1}{2}$

$y = x^2 - 3x + 1 \rightarrow x_s = \frac{-b}{2a} = \frac{3}{2}$

عرض از مبدأ تابع = ارتفاع مثلث ، $\frac{\sqrt{\Delta}}{|a|}$ = اختلاف ریشه‌ها = قاعده مثلث

قاعده مثلث $= \frac{\sqrt{(m+2)^2 - 8m}}{2} = \frac{\sqrt{m^2+4m+4-8m}}{2} = \frac{\sqrt{m^2-4m+4}}{2} = \frac{|m-2|}{2}$

$S_\Delta = \frac{1}{2} \times \frac{|m-2|}{2} \times |m| = \frac{3}{4} \rightarrow |m(m-2)| = 3 \rightarrow m(m-2) = 3 \rightarrow m^2 - 2m - 3 = 0 \rightarrow \begin{cases} m = -1 \\ m = 3 \end{cases}$

$\rightarrow m(m-2) = -3 \rightarrow m^2 - 2m + 3 = 0 \rightarrow \Delta < 0$

(۰)

$\sqrt{\alpha} - \sqrt{\beta} = 1 \xrightarrow{\text{۲توان}} \alpha + \beta - 2\sqrt{\alpha\beta} = 1 \rightarrow S - 2\sqrt{P} = 1 \xrightarrow[P=m]{S=3m} 3m - 2\sqrt{m} = 1$

$\rightarrow 3m - 2\sqrt{m} - 1 = 0 \xrightarrow{\sqrt{m}=t} 3t^2 - 2t - 1 = 0 \xrightarrow{a+b+c=0} t = 1 \;,\; t = \frac{-1}{3}$

$\begin{cases} \sqrt{m} = 1 \; ✓ \\ \sqrt{m} = \frac{-1}{3} \; ✗ \end{cases} \rightarrow m = 1$

$2x^2 - mx - m = 0 \xrightarrow{m=1} 2x^2 - x - 1 = 0 \rightarrow P = \frac{c}{a} = \frac{-1}{2}$

$y_{min} = \frac{4ac-b^2}{4a}$ $\begin{cases} a=a \\ b=3 \\ c=a \end{cases}$ $\rightarrow y_{min} = \frac{4a^2-9}{4a} = \frac{7}{8} \xrightarrow{\times 8a} 2(4a^2-9)=7a$

$\rightarrow 8a^2-18=7a \rightarrow 8a^2-7a-18=0 \rightarrow \Delta=(-7)^2+4\times8\times18 \rightarrow \sqrt{625}=25$ (۲) ۶

$a=\frac{7\pm25}{16} \rightarrow a_1=\frac{32}{16}=2 \ , a_2=\frac{-18}{16}=-\frac{9}{8}$ $a>0$ چون $\rightarrow a=2$ ✓

کمترین مقدار تابع برابر $\frac{7}{8}$ می‌شود $\boxed{\text{مقدار} = 1}$ ✓

$x_{رأس} = -\frac{B}{2A} = -\frac{a}{2(-a)} = \frac{1}{2}$ ، $y_1=-a(\frac{1}{2})^2+a(\frac{1}{2})+2=-\frac{a}{4}+\frac{a}{2}+2=\frac{a}{4}+2$

رأس سهمی اول $\Rightarrow (\frac{1}{2}, \frac{a}{4}+2)$ جواب سوال ۸ است (۲) $b-a=6$

$y=2b(\frac{1}{4})-b(\frac{1}{2})-1=-1 \Rightarrow \frac{a}{4}+2=-1 \rightarrow \frac{a}{4}=-3 \rightarrow \boxed{a=-12}$ ✓ ۸

$y=2bx^2-bx-1$ * $x_2=-\frac{-b}{2(2b)}=\frac{b}{4b}=\frac{1}{4}$; $y_2=2b(\frac{1}{16})-b(\frac{1}{4})-1=-\frac{b}{8}-1$

رأس سهمی دوم $(\frac{1}{4}, -\frac{b}{8}-1)$ / $y=-(-12)x^2+(-12)x+2=12x^2-12x+2 \xrightarrow{x=\frac{1}{4}} y=-\frac{1}{4}$ / $\frac{-b}{8}-1=-\frac{1}{4} \rightarrow$ $\boxed{b=-6}$

$x^2-(a+1)x+a=0 \xrightarrow{a+b+c=0} \begin{cases} x_1=1 \\ x_2=a \end{cases} \rightarrow x_2=3$

$x^2-(3(3)+1)x+b=0 \rightarrow x^2-10x+b=0 \xrightarrow{S=10} \begin{cases} x_1'=4 \\ x_2'=6 \end{cases}$ ۷

$x_1'\times x_2'-x_1\times x_2=6\times4-3\times1=21$

$3\times1-6\times4=-21$ (۰)

$x_{رأس}=\frac{-B}{2A} \rightarrow A=25\alpha \ , B=4 \Rightarrow x_{رأس}=\frac{-4}{2(25\alpha)}=\frac{-4}{50\alpha}=\frac{-2}{25\alpha}$

$\alpha+\beta=-\frac{B}{A}=\frac{-4}{25\alpha}$, $\alpha\beta=\frac{C}{A}=\frac{\beta}{25\alpha} \rightarrow 25\alpha^2\beta=\beta \rightarrow \beta(25\alpha^2-1)=0 \rightarrow 25\alpha^2=1 \rightarrow \alpha=\pm\frac{1}{5}$ ۹

$\beta>\alpha$, $\alpha=\frac{1}{5}$, $\alpha+\beta=-\frac{4}{25\alpha} \rightarrow \beta=-1$ $\beta \not> a$ / اگر $\alpha=-\frac{1}{5}$ (۱٫۷۵)

$-\frac{1}{5}+\beta=-\frac{4}{25\times(-\frac{1}{5})} \Rightarrow \boxed{\beta=1}$ $1>\frac{1}{5} \Rightarrow \alpha=-\frac{1}{5}$

$x_{رأس}=\frac{-2}{25\alpha}=\frac{2}{5} \longrightarrow (\frac{2}{5}, \frac{9}{5}) \rightarrow$ عرض را

$x^2-(a^2+b^2-12)x+a+b-1=0 \Rightarrow a+b=a^2+b^2-12$, $ab=a+b-1$

$a^2+b^2=(a+b)^2-2ab$, $a+b=(a+b)^2-2ab-12 \rightarrow a+b=(a+b)^2-2a-2b+2-12$ ۱۰

$a+b=(a+b)^2-2(a+b)-10 \rightarrow (a+b)^2-3(a+b)-10 \rightarrow S^2-3S-10=0$

$(S-5)(S+2)=0 \rightarrow \boxed{a+b=5}$ ✓ (۲)