نام و نام خانوادگی ...محمدحسین خورشیدی...... پاسخنامه تشریحی تکلیف شماره ..۱و۲.. کلاس ..دهم ریاضی B.......... ۱۴

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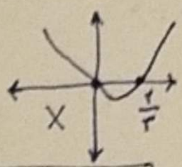
الف) $y=3x^2-2x$

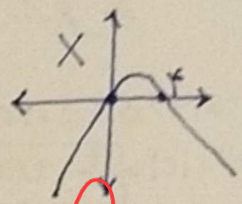
$\min \begin{cases} \frac{-b}{2a}=\frac{1}{3} \\ \frac{-\Delta}{4a}=\frac{-1}{3} \end{cases}$



از ناحیه سوم نمی‌گذرد.

ب) $y=-x^2+4x$

$\max \begin{cases} \frac{-b}{2a}=2 \\ \frac{-\Delta}{4a}=4 \end{cases}$



از ناحیه دوم نمی‌گذرد.

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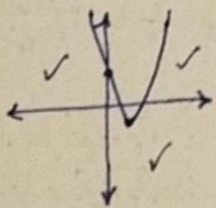
الف) $y=2x^2-5x+2$

$\min \begin{cases} \frac{-b}{2a}=\frac{5}{4} \\ \frac{-\Delta}{4a}=\frac{-9}{8} \end{cases}$

$\xrightarrow{x=0} y=2$

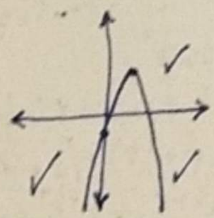


از نواحی اول و دوم و چهارم می‌گذرد.

ب) $y=-x^2+4x-1$

$\max \begin{cases} \frac{-b}{2a}=2 \\ \frac{-\Delta}{4a}=3 \end{cases}$

$\xrightarrow{x=0} y=-1$



از نواحی اول و سوم و چهارم می‌گذرد.

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الف) $\frac{\alpha+\beta}{\alpha-\beta}=\frac{\frac{-b}{a}}{\frac{\sqrt{\Delta}}{|a|}}=\frac{1}{-13}=\boxed{\frac{-1}{13}}$

الف) $\frac{\alpha+\beta}{\alpha-\beta}=\frac{1}{\sqrt{13}}$

$S=\frac{-b}{a}=\frac{1}{1}=1$

$P=\frac{c}{a}=-3$

$\alpha-\beta=\frac{\sqrt{\Delta}}{|a|}=\sqrt{13}$

$\alpha-\beta=-13$

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ب) $\alpha^2+\beta^2=S^2-2P=1^2-2(-3)=1+6=\boxed{7}$

ج) $\alpha^3+\beta^3=S^3-3SP=1^3-3(1)(-3)=1+9=\boxed{10}$

د) $\alpha^3-\beta^3=(\alpha+\beta)^2(\alpha-\beta)-\alpha\beta(\alpha-\beta)=-13-(-3\times(-13))=-13-39=\boxed{-52}$

د) $\alpha^3-\beta^3=(\alpha-\beta)(\alpha^2+\beta^2+\alpha\beta)=\sqrt{13}(7-3)=4\sqrt{13}$

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$y=(x-2)(x^2-ax+a) \rightarrow$ ریشه برابر ۲ $\Rightarrow x^2-ax+a \xrightarrow{①} \Delta<0 \Rightarrow a^2-4a<0 \Rightarrow a(a-4)<0$

$\Rightarrow$ (جدول تعیین علامت: ۰، ۴ : + − +) $\Rightarrow a:(0,4)$

$\xrightarrow{②} x^2-ax+a=y \xrightarrow{x=2} 4-2a+a=0 \Rightarrow 4-a=0 \Rightarrow a=4$

$① , ② \Rightarrow \boxed{a:(0,4]}$

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← در صفحه‌ی سوم نوشته شده است. →

$B(V-2a, a-2)$ $A(2a+2, a-2)$

رئوس $\Rightarrow \frac{V-2a+2a-3}{2} = \frac{-b}{2a}$ = طول رأس سهمی $= a = b \Rightarrow a = \frac{-1}{2}$

$\Rightarrow$ عرض رأس سهمی $= a-2 = 3 = \frac{-\Delta}{4a} \Rightarrow 3 = \frac{-\Delta}{-2} \Rightarrow \Delta = 9$ ۶

$\Rightarrow b^2 - 4ac = 9 \Rightarrow 2a + 2c = 9 \Rightarrow 2c = -19 \Rightarrow c = \frac{-19}{2}$ (ورایب پایین صفحه) ۱

$\rightarrow$ مساحت $= |c| = \boxed{\frac{19}{2} = 9/5}$

$ax^2 - ax - b = 0$ $\qquad \frac{a \pm \sqrt{a^2+4ab}}{2a}$

$\Delta = b^2 - 4ac = a^2 + 4ab$ ناصله مثبت اعلام می‌شود

$\left.\begin{array}{l} \alpha = \frac{1}{2} - \sqrt{\frac{1}{4} + \frac{2b}{a}} \\ \beta = \frac{1}{2} + \sqrt{\frac{1}{4} + \frac{2b}{a}} \end{array}\right\} \ominus \Rightarrow -2\sqrt{\frac{1}{4} + \frac{2b}{a}} = \alpha - \beta = -2\sqrt{\frac{1}{4} + \frac{2b}{-20b}} = -2\sqrt{\frac{1}{4} - \frac{1}{10}} = -2\sqrt{\frac{6}{20}} = \frac{-4}{2\sqrt{5}} = \boxed{\frac{-2}{\sqrt{5}}}$ ۷

$20(2\beta^2 + \alpha^2 - \beta) = 17 \Rightarrow 2\left(\frac{1}{2} + \sqrt{\frac{1}{4} + \frac{2b}{a}}\right)^2 + \left(\frac{1}{2} - \sqrt{\frac{1}{4} + \frac{2b}{a}}\right)^2 - \left(-\frac{1}{2} - \sqrt{\frac{1}{4} + \frac{2b}{a}}\right) = \frac{17}{20}$ ۲

$\Rightarrow 2\left(\frac{1}{4} + \left(\frac{1}{2} + \frac{2b}{a}\right) + \sqrt{\frac{1}{4} + \frac{2b}{a}}\right) + \left(\frac{1}{4} + \left(\frac{1}{4} + \frac{2b}{a}\right)\right) - \sqrt{\frac{1}{4} + \frac{2b}{a}} - \frac{1}{2} - \sqrt{\frac{1}{4} + \frac{2b}{a}} = \frac{17}{20}$

$\frac{1}{2} + \frac{1}{2} + \frac{4b}{a} + 2\sqrt{\frac{1}{4} + \frac{2b}{a}} + \frac{1}{4} + \frac{2b}{a} - \sqrt{\frac{1}{4} + \frac{2b}{a}} - \frac{1}{2} - \sqrt{\frac{1}{4} + \frac{2b}{a}} = \frac{17}{20} \Rightarrow 1 + \frac{6b}{a} = \frac{17}{20} \Rightarrow 20b = -a$

$c = \frac{3}{2}$ $\qquad \frac{-\Delta}{4a} = \frac{-1}{2} \Rightarrow \frac{\Delta}{4a} = 1 \Rightarrow \Delta = 4a \Rightarrow b^2 - 4ac = 4a$

$\frac{-b}{2a} = \frac{-\Delta+1}{2} = -2 \Rightarrow \frac{b}{2a} = 2 \Rightarrow b = 4a$

$\Rightarrow (4a)^2 - 4a\left(\frac{3}{2}\right) = 4a \Rightarrow 16a^2 - 6a = 4a \Rightarrow 16a^2 - 8a = 0$ ۸

$\Rightarrow a(16a-8) = 0 \Rightarrow a = 0, \frac{1}{2}$ $\left.\begin{array}{l} \\ a > 0 \end{array}\right\} \Rightarrow a = \frac{1}{2} \Rightarrow b = 2$ ۲

$\rightarrow \frac{1}{4}x^2 + 2x + \frac{3}{2} = 2 \quad \begin{array}{l} x=1 \rightarrow \frac{1}{4} + 2 + \frac{3}{2} = 4 \\ x=\alpha \rightarrow \frac{\alpha^2}{4} + 2\alpha + \frac{3}{2} = 0 \end{array} \Rightarrow \beta = \boxed{4}$

$a\alpha^2 + 6a\alpha + a = 0 \rightarrow \begin{cases} S = \frac{-b}{a} = -6 \\ P = \frac{c}{a} = 1 \end{cases}$ $\qquad |\alpha - \beta| = \frac{\sqrt{\Delta}}{|a|} = \sqrt{36 - 4a}$ $\qquad \alpha < \beta \rightarrow \alpha - \beta < 0$

$18\alpha^2 + 12\beta^2 = 18\sqrt{2} + 18a \rightarrow \frac{18}{4}(\alpha^2 + 2\beta^2) + \frac{12}{4}(\alpha^2 - \beta^2) = 18\sqrt{2} + 18a \rightarrow \frac{18}{4}(S^2 - P) + \frac{12}{4}(\alpha+\beta)(\alpha-\beta) = 18\sqrt{2} + 18a$

$\rightarrow \frac{18}{4}(S^2 - P) - \frac{12}{4}S\sqrt{36 - 4a} \rightarrow \frac{18}{4}(36 - 4a) - \frac{12}{4}(-6)\sqrt{36 - 4a} = 18\sqrt{2} + 18a \rightarrow 90 - 36a + 18\sqrt{36 - 4a} = 18\sqrt{2} + 18a$ ۹

$\begin{cases} 90 - 36a = 18a \rightarrow a = 1 \\ 18\sqrt{36 - 4a} = 18\sqrt{2} \rightarrow 36 - 4a = 2 \rightarrow a = 1 \end{cases}$ ۵

$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = \frac{\sqrt{\alpha} + \sqrt{\beta}}{\sqrt{\alpha\beta}} = 5 \Rightarrow \frac{\sqrt{\alpha} + \sqrt{\beta}}{\frac{1}{6}} = 5 \Rightarrow \sqrt{\alpha} + \sqrt{\beta} = \frac{5}{6} \Rightarrow (\sqrt{\alpha} + \sqrt{\beta})^2 = \frac{25}{36}$

$\Rightarrow \alpha + \beta + 2\sqrt{\alpha\beta} = \frac{25}{36} \Rightarrow \frac{m+12}{36} + \frac{1}{18} = \frac{25}{36} \Rightarrow \frac{m+12+12}{36} = \frac{25}{36} \Rightarrow m + 24 = 25$

$\Rightarrow m = -1 \rightarrow P' = \frac{c'}{a'} = \frac{2}{m} = \frac{2}{-1} = \boxed{-2}$ ۱۰ ۲

$P = \frac{c}{a} = \frac{1}{36} \Rightarrow \sqrt{P'} = \frac{1}{6}$ $\qquad S = \frac{-b}{a} = \frac{m+12}{36}$

14 Aug 2025 ۲۳ مرداد ۱۴۴۷
پنج‌شنبه

(۳)

$2x^2-12x-a=0 \begin{cases} 2\alpha^2-12\alpha-a=0 \\ 2\beta^2-12\beta-a=0 \end{cases} \Rightarrow + \begin{cases} 2\alpha^2+2\beta^2-12\alpha-12\beta-2a=0 \quad (*) \\ -\left\{2\alpha^2-2\beta^2-12\alpha+12\beta=0 \Rightarrow 2\alpha^2+12\beta=2\beta^2+12\alpha \quad (1)\right. \end{cases}$

$2\alpha^2+2\beta^2-12\alpha-12\beta-2a=0 \Rightarrow 2(\alpha^2+\beta^2-6\alpha)-12\beta-2a=0$

$2\alpha^2+\beta^2-6a=7 \Rightarrow \alpha^2+\beta^2-6\alpha=7-\alpha^2$

$\Rightarrow 21-2\alpha^2-12\beta-2a \overset{(*)}{=} 0$

$(1)\text{و}(*) \Rightarrow 21-2\beta^2-12\alpha=0 \Rightarrow \begin{cases} 21-2\alpha^2-12\beta-2a=0 \\ 21-2\beta^2-12\alpha-2a=0 \end{cases} \overset{+}{\Rightarrow} 42-2\alpha^2-2\beta^2-12\beta-12\alpha-4a=0$

$\Rightarrow 2\alpha^2+2\beta^2+12\alpha+12\beta+4a=42 \quad (2)$

$(2)\text{و}(*) \Rightarrow \begin{matrix} 2\alpha^2+2\beta^2+12\alpha+12\beta+2a=42 \\ 2\alpha^2+2\beta^2-12\alpha-12\beta-2a=0 \end{matrix} \overset{+}{\Rightarrow} 12\alpha+12\beta+12\alpha+12\beta+4a=42$

$\Rightarrow 24(\alpha+\beta)+4a=42 \Rightarrow 96+4a=42 \Rightarrow 4a=-54 \Rightarrow a=-\frac{27}{2}$

(۲)

$S=\alpha+\beta=\frac{-b}{a}=\frac{12}{2}=6$

$\rightarrow 2x^2-12x+9 \rightarrow \Delta=144-108=36 \Rightarrow \sqrt{\Delta}=6$

$x=\frac{12\pm 6}{4}=\begin{cases} 1 \\ 3 \end{cases} \rightarrow \frac{-9}{3}=\boxed{-3}$

سوال ۶

$M_S=b=\frac{(4-2a)+(2a+3)}{2}=5 \rightarrow S(5,3)$

$\left.\begin{matrix} 4-2a>0 \rightarrow a<2 \\ 2a+3>0 \rightarrow a>-\frac{3}{2} \\ a-2>0 \rightarrow a>2 \end{matrix}\right\} \xrightarrow{\text{اشتراک}} a=2 \rightarrow A(9,1), B(1,1)$

$(y-3)=a(x-5)^2 \xrightarrow{(1,1)} (1-3)=a(1-5)^2 \rightarrow a=-\frac{1}{8} \rightarrow (y-3)=-\frac{1}{8}(x-5)^2$

$x=0 \rightarrow (y-3)=-\frac{1}{8}(0-5)^2 \rightarrow y=3-\frac{25}{8} \rightarrow y=-\frac{1}{8} \rightsquigarrow \text{فاصله}=\frac{1}{8}$

15 Aug 2025 ۲۴ مرداد ۱۴۴۷
جمعه

مرداد