Subject : تکلیف ۲۴ . جمعه ۴

Year : Month : Date : دختران دهم ۱۲ هستی نصیری نژاد

سوال ۱

الف) $y=2x^2-4x+1 \rightarrow ext$ | $\frac{-b}{2a} \rightarrow \frac{4}{4}=1$ | $\frac{-\Delta}{4a} \rightarrow \frac{-(16-4\times2\times1)}{2\times4}=-1$

$a>0 \rightarrow 2>0 \rightarrow min$

ب) $y=-2x^2+3x-5 \rightarrow ext$ | $\frac{-b}{2a} \rightarrow \frac{-3}{2\times-2}=\frac{3}{4}$ | $\frac{-\Delta}{4a} \rightarrow \frac{-(9-4\times2\times5)}{4\times-2} \cdot \frac{31}{-1}=\frac{31}{-1}$

$a<0 \rightarrow -2<0 \rightarrow max$

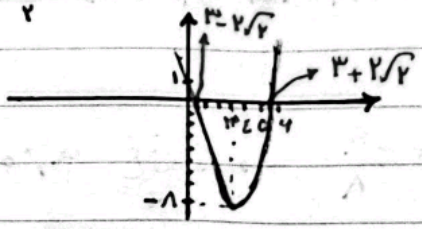
سوال ۲

الف) $y=x^2-4x+1$ ریشه‌ها: $\frac{4\pm\sqrt{36-4\times1\times1}}{2}=\frac{4\pm4\sqrt{2}}{2}=2\pm2\sqrt{2}$

$a \rightarrow 1, 1>0 \rightarrow min$

$ext \left| \frac{-b}{2a}=\frac{-(-4)}{2}=2 \right.$

-1

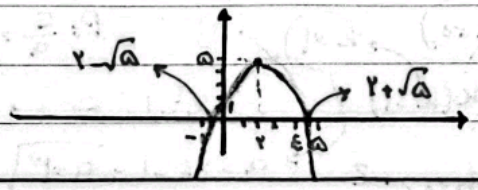


ب) $y=-x^2+4x+1$ ریشه‌ها: $\frac{-4\pm\sqrt{16-4\times-1\times1}}{2\times-1}=\frac{-4\pm2\sqrt{5}}{-2}=\frac{-2\pm\sqrt{5}}{-1}=2\pm\sqrt{5}$

$a \rightarrow -1 \quad a<0 \rightarrow max$

$ext \left| \frac{-b}{2a}=\frac{-4}{2\times-1}=2 \right.$

5



سوال ۳

$\underbrace{\alpha\beta}_{P}=-2, \quad \underbrace{\alpha+\beta}_{S}=1 \qquad 4x^3+kx^2-9x-2=0$

$x^2-Sx+P=x^2-x-2 \rightarrow (x^2-x-2)(4x+a)=4x^3+4x^2-9x-2$

$\rightarrow 4x^3+x^2(-4+a)+x(-1-a)-2a \rightarrow 4x^3+4x^2-9x-2$

$\rightarrow -2a=-2 \rightarrow a=1 \qquad -4+k=-3 \rightarrow \boxed{k=-3}$

سوال ۴

$x^2-3mx+m=0 \qquad (\sqrt{\alpha}-\sqrt{\beta})^2=(1)^2 \rightarrow \alpha+\beta-2\sqrt{\alpha\beta}=5-2\sqrt{5}$

$\rightarrow 3m-2\sqrt{m}-1=0 \rightarrow 3t^2-2t-1 \rightarrow 4-4(3)(-1)=16$

$\rightarrow \frac{2\pm\sqrt{16}}{6} \begin{cases} \rightarrow 1 \rightarrow \sqrt{1}=1 \checkmark \\ \rightarrow \frac{-1}{3} \rightarrow \sqrt{\frac{-1}{3}} \text{ ق ق ن} \end{cases}$

$2x-x-1=0 \qquad \frac{-1}{2}\times1=\frac{-1}{2}$

$x=1 \quad c=\frac{-1}{2}$

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سوال ۵

$y = 2x^2 - (m+2)x + m = 0 \xrightarrow{a+b+c=0} x=1, \frac{m}{1}$

$y(0) =$ $\quad m = -\frac{1}{2}, \frac{3}{2}$

$\rightarrow S = \frac{1}{2}\left|m\left(\frac{m}{2}-1\right)\right|$

$\rightarrow \left|m\left(\frac{m}{2}-1\right)\right| = \frac{3}{2} \rightarrow \left|m(m-2)\right| = 3 \rightarrow m=3 \rightarrow \frac{m}{2} = \frac{3}{2}$

$m=-1 \rightarrow \frac{m}{2} = \frac{-1}{2}$

سوال ۶

$y = ax^2 + 3x + a \quad ext \left| \begin{array}{l} -\frac{b}{2a} = -\frac{3}{2a} \\ -\frac{\Delta}{4a} : \text{عرض} \rightarrow -\frac{(b^2-4ac)}{4a} = \frac{-9+4a^2}{4a} = \frac{7}{8} \end{array} \right.$

$28a = -28 + 32a^2 \div 4 \rightarrow 8a^2 - 7a - 14 = 0 \rightarrow a^2 - 7a - 14 = 0$

$(a+9)(a-16) = 0$

$a = -\frac{9}{8} \rightarrow$ قابل قبول $\quad a > 0 \rightarrow \min \quad a = \frac{16}{8} = 2$

سوال ۷

$x^2 - (a+1)x + a = 0 \rightarrow 2k+1, 2k-1 \rightarrow S = -\frac{b}{a} \rightarrow (a+1) \rightarrow 2k+1+2k-1 = a+1$

$n \in k$

$P = \frac{c}{a}, a \rightarrow (2k+1)(2k-1) = a$ $\quad a = 4k-1$

$k=0$ قابل قبول نیست - بعد از جایگذاری صفر می‌شود

$k=1$ ✓

$4k(k-1) \leftarrow 4k^2 - 1 = 4k - 1 \leftarrow k^2 - 1 = a$

$a = 4k - 1 = a = 3$

$x^2 - (3a+1) + b = 0 \rightarrow 2$

$2+2$

$3a+1 \rightarrow 2+2+2 = 3a+1 \rightarrow 2 = 3a-1 \rightarrow a = 3$

$4 \times 4 = 16 \leftarrow b = P = 2(2+2) = b \leftarrow 4 \times 4 = 16$

$2 = 8 \rightarrow 2 = 4$

اختلاف: $24 - 3 = 21$

سوال ۱

$y = ax^2 + ax + 2 \rightarrow ext\left(\frac{1}{2}, \frac{a^2+8a}{4a}\right)$

$y = 2bx^2 - bx - 1 \rightarrow ext\left(\frac{1}{4}, \frac{b^2+8b}{-8b}\right)$

$2b\left(\frac{1}{4}\right) - b\left(\frac{1}{2}\right) - 1 = \frac{a}{4} + 2 \rightarrow \frac{a}{4} = -3 \rightarrow a = -12$

$\frac{-a}{16} + \frac{a}{4} + 2 = \frac{-b}{8} - 1 \rightarrow \frac{12}{16} = \frac{-b}{8} \rightarrow b = -4$

$b - a = -4 - (-12) = 8$

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سوال ۹ ناحیه اول

$\alpha.\beta = \frac{B}{2D\alpha} \rightarrow y = -5x^2 + 8x + 1$

$\alpha = \frac{1}{5}$

$\alpha+\beta = -\frac{8}{2D\alpha}$ ← $\frac{1}{5} = \beta = \frac{-8}{5} - \frac{1}{5} = -1$ $\alpha < \beta$

← $-\frac{1}{5} = \beta = \frac{8}{5} + \frac{1}{5} = 1$ ✓

ext | $\frac{8}{10}$ → ناحیه اول

$\frac{14+20}{20} = \frac{34}{20}$

سوال ۱۰

$ax^2+bx+c=0$ $\quad S = \frac{-b}{a}$ $\quad P = \frac{c}{a}$

$a+b = a^2+b^2-12 \rightarrow S = S^2 - 2P - 12 \rightarrow S^2 - 2S + 2 - 12$

$a.b = a+b-1 \rightarrow P = S-1$

$S^2 - 3S - 10 = 0$

$(S-5)(S+2) = 0$

$S = -2$ و $S = 5$ ← چون a و b اعداد طبیعی هستند

$S = 5$

$S = -2$ ← غیرقابل قبول.