۱۸,۷۵

ماتریکس ①

Subject:
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Sa Su Mo Tu We Th Fr

۳-۱

الف) $y = 2x^2 - 4x + 1$

ext $\begin{cases} \frac{-b}{2a} = \frac{4}{4} = 1 \\ -1 \end{cases}$ $a > 0$ ، $y_{min}$

ب) $y = -2x^2 + 3x - 5$

ext $\begin{cases} \frac{-b}{2a} = \frac{-3}{-4} = \frac{3}{4} \\ \frac{31}{-8} = -\frac{5}{4a} \end{cases}$ $a < 0$ ، $y_{max}$

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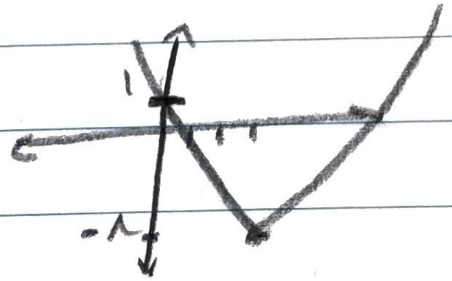
الف) $y = x^2 - 6x + 1$

| $x$ | $3$ |
|---|---|
| $y$ | $-8$ |

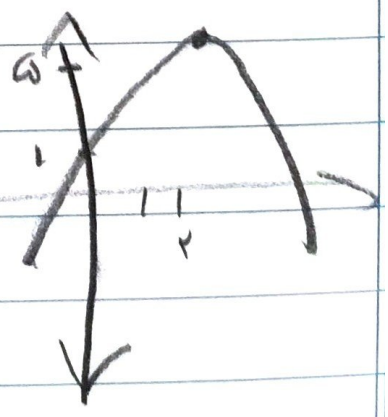



$y = 1$ عرض از مبدا

ب) $y = -x^2 + 6x + 1$

| $x$ | $2$ |
|---|---|
| $y$ | $9$ |

$y = 1$ عرض از مبدا

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$\alpha+\beta=1$ $\quad \alpha\beta=-2=\alpha(1-\alpha) \Rightarrow$

$\beta=1-\alpha$ $\quad \alpha-\alpha^2=-2 \rightarrow \alpha^2-\alpha-2=0$

$(\alpha-2)(\alpha+1)=0$

$4x^3+kx^2-9x-2=0 \xrightarrow{x=2}$

$32+4k-18-2=0 \rightarrow k=-3$

$4x^3+kx^2-9x-2=0 \xrightarrow{x=-1} k=-3$

$|\sqrt{x_1}-\sqrt{x_2}|=1$

$(\sqrt{x_1}-\sqrt{x_2})^2=1$

$\frac{x_1+x_2}{3m}-2\sqrt{\frac{x_1x_2}{m^2}}=1 \Rightarrow 3m-2\sqrt{m}=1$

$3t^2-2t-1=0$ $\quad t=\sqrt{m}$

$t=\frac{2\pm\sqrt{16}}{6} \Rightarrow t=1 \text{ or } t=-\frac{1}{3}$

$\sqrt{m}>0 \Rightarrow t=1 \;,\; \sqrt{m}=1 \;,\; m=1$

$x_0=\frac{-m}{2}=\boxed{\frac{-1}{2}}$

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مساحت مثلث $= \frac{1}{2} \times \underbrace{|x_2 - x_1|}_{\text{طول قاعده}} \times \underbrace{|m|}_{\text{ارتفاع}} = \frac{3}{4}$

$|x_2 - x_1| = \frac{\sqrt{\Delta}}{|a|} = \frac{(m+2)^2 - 4m}{2} = \frac{m-2}{2}$

$\frac{1}{2} \times \frac{m-2}{2} \times m = \frac{3}{4}$

$\frac{m(m-2)}{4} = \frac{3}{4} \Rightarrow m(m-2) = 3$

$m = 3 \quad \text{یا} \quad m = -1$

طول رأس $= \frac{m}{2} = \frac{3}{2} \quad \text{یا} \quad \frac{-1}{2}$

۶ - ج

$a < 0 \qquad \min$

$\frac{-b}{2a} = \frac{-3}{2a} \Rightarrow y = a\left(\frac{9}{16a^2}\right) + 3\left(\frac{-3}{4a}\right) + 9$

$y = \frac{9}{16a} - \frac{9}{4a} + a \Rightarrow \frac{-9}{16a} + 9$

$a - \frac{9}{16a} = \frac{7}{8} \rightarrow 8a^2 - 7a - 18 = 0$

$a = \frac{7 \pm \sqrt{16 \times 9 + 49}}{16} = \frac{7 \pm 25}{16} \Rightarrow$

$a_1 = 2$ ، $a_2 = \frac{-9}{8} \rightarrow$ قبول

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۷- $x^2-(a+1)x+a \to S = a+1$

$n, n+2 \to 2n+2 = a+1$

$a = 2n+1$

$\frac{c}{a} = a$ ، $n(n+2) = n^2+2n = a$

$n^2+2n = a \to n^2+2n = 2n+1 \to n^2 = 1 \to n = 1$

پس ریشه‌ها یک و سه هستند.

$2m, 2m+2$ $\quad -\frac{b}{a} = 10$

$4m+2 = 10$

$m = 2$

ریشه‌ها ۴ و ۶ هستند

ضرب $= 24$

$24 - 3 = 21$

$3 - 24 = -21$

۸- گزینه ۳

$x_{راس} = \frac{-b}{2a} = \frac{-a}{-2a} = \frac{1}{2}$

ادامه راه حل درست در صفحه بعد

$y = \frac{a}{4} + 2$

$\frac{a}{4} + 2 = \frac{b}{2} - \frac{b}{2} - 1 \to a = -12$

$x_{راس} = \frac{-b}{2a} = \frac{1}{4}$ $\quad y = \frac{-b}{8} - 1$

$\frac{-b}{8} - 1 = \frac{-12}{16} + a \to \frac{-b-8}{8} = \frac{48}{16}$

$b = -42 \to b - a = -42 - (-12) = -30$

$\frac{-a}{16} + \frac{a}{4} + 2 = \frac{-b}{8} - 1 \quad \frac{12}{16} = \frac{-b}{8} \rightarrow b = -6$ (گزینه ۱)

$b - a = -6 - (-12) = 6$

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$\alpha + \beta = \frac{-4}{20\alpha\beta}$ (گزینه ۲)

$\alpha\beta = \frac{\beta}{20\alpha} \Rightarrow 20\alpha^2\beta = \beta \Rightarrow \beta \neq 0$

$20\alpha^2 = 1 \Rightarrow \alpha = \pm\frac{1}{5}$

$\alpha + \beta = \frac{-4}{20 \times \frac{1}{5}} = \frac{-4}{5} \Rightarrow \beta = -1$

$\beta > \alpha \rightarrow -1 > \frac{1}{5}$ غ ق ق

$\alpha + \beta = \frac{-4}{-20 \times \frac{1}{5}} = \frac{4}{5} \Rightarrow \beta = 1$

$1 > \frac{-1}{5}$ ق ق

نابه‌اول $\Leftarrow \begin{cases} x > 0 \leftarrow \frac{-b}{2a} = \frac{-4}{2(-5)} = 0/4 \text{ رأس سهمی} \\ y = -5(0/4)^2 + 4(0/4) + 1 = 1/8 \\ y > 0 \end{cases}$

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$a+b = a^2+b^2-12$

$a^2+b^2-a-b-12=0$

$ab = a+b+1$

$ab-a-b+1=0 \Rightarrow (a-1)(b-1)=0$

$a=1$ یا $b=1$

اگر $a=1 \Rightarrow$ جایگذاری $\Rightarrow 1+b = 1^2+b^2-12$

$b = b^2-12 \Rightarrow (b-4)(b+3)=0$

اگر $b=1 \Rightarrow a=4$ و اگر $b=4 \Rightarrow$

$a+b=5$ در هر ۲ حالت

Rali