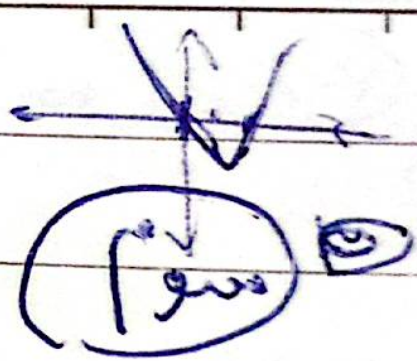
Subject: الثنا مينابنى Date: / /

① الف) min

$x(3x-2)$

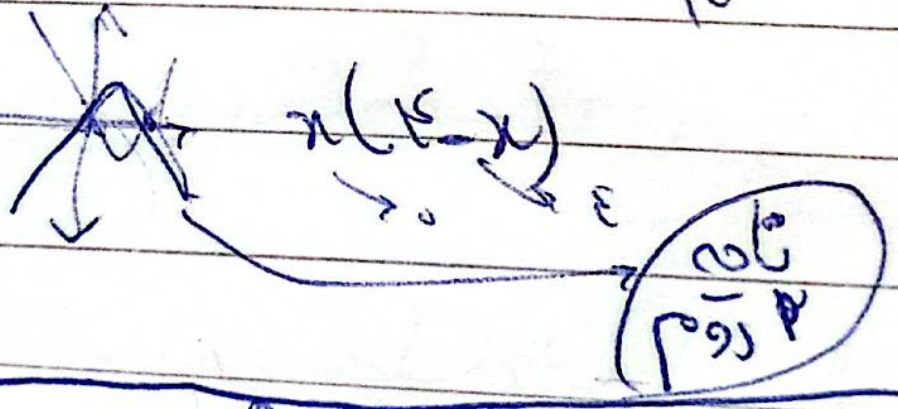
$x=0 \quad x=\frac{2}{3}$



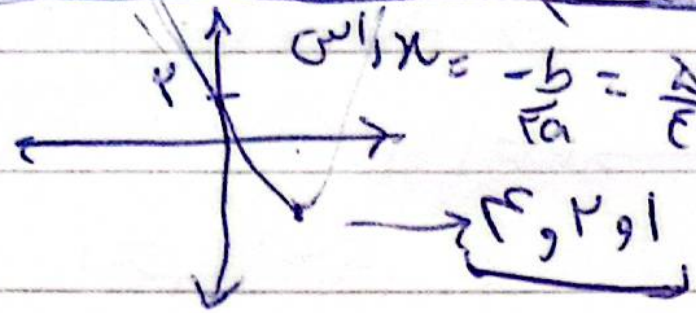
ب) max

$x(4-x)$

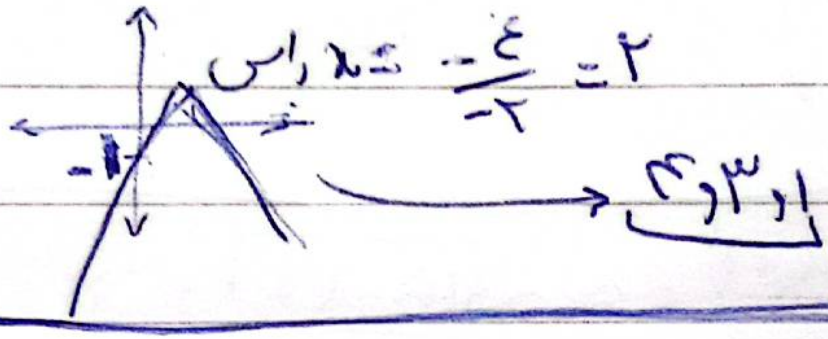
$x=0 \quad x=4$



(۲) الف) min دارد



ب) max دارد



(۳) الف) $\frac{S}{\sqrt{\Delta}} = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$ $S=1$ $P=-3$

ب) $\alpha^2+\beta^2 = S^2-2P = 1+6 = 7$

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

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

$4\sqrt{13}$

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(۴) $x^2 - ax + a^2$ مثبت $\rightarrow \Delta < 0 \rightarrow a^2 - 4a < 0$

$a(a-4) < 0$

	۰		۴	
	+	−	+	

$(0,4)$ II

$x^2 - ax + a$ ریشه‌ی مثبت $\rightarrow (x-1)^2 = x^2 - 4x + 4 \rightarrow a = 4$ II

I, II $\rightarrow (0,4]$

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(۵) $\alpha + \beta = 4 \rightarrow \beta = 4 - \alpha$

$2\alpha^2 + \beta^2 - 4\alpha = 17 \rightarrow 2\alpha^2 + (4-\alpha)^2 - 4\alpha = 17 \rightarrow \alpha^2 - 12\alpha + 9 = 0$

$\alpha^2 - 4\alpha + 3 = 0 \rightarrow \alpha = 1, 3$

$\alpha = 3 \quad \beta = 1$

$a = -9$

$a = -9$

$\frac{-9}{3} = -3$

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(۶) $\frac{7 - 2a + 2a + 3}{2} = \Delta \sim (\Delta, 3)$

$7 - 2a > 0 \rightarrow a < 3.5$, $2a + 3 > 0 \rightarrow a > -1.5$, $a - 2 > 0 \rightarrow a > 2$

$A = (-1, 1)$ $B = (1, 3)$ $a = 3$ ← ریشه‌ی مثبت

$(x-\Delta)^2 = -4a(y-3)$ $\xrightarrow{(1,1)}$ $16 = 16a \rightarrow a = 1$

$(x-\Delta)^2 = -16(y-3)$ $(0-\Delta)^2 = -16(y-3) \rightarrow y = \frac{1}{16}$

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(۷) $|\alpha-\beta|=\frac{\sqrt{\Delta}}{|a|}$ $ax^2-ax-b \longrightarrow x^2-x-\frac{b}{a}=0$ ($\frac{b}{a}=C$)

$x^2-x+C=0$ $\beta'-\beta=-C$ $2\beta^2+\alpha^2-\beta=\frac{17}{20}$

$\alpha^2+\beta^2$

$S^2-2P-C=1-2C-C=1-3C=\frac{17}{20} \rightarrow C=\frac{1}{4}$

$\frac{\sqrt{\Delta}}{|a|}=\frac{\sqrt{1-\frac{1}{\Delta}}}{1}=\frac{2}{\sqrt{\Delta}}$

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(۸) $y=a(x-h)^2+k$ $\begin{matrix}h\\R\end{matrix}$ $\rightarrow a(x+2)^2-\frac{1}{2}$ $\xrightarrow{\sigma''}$ $\begin{matrix}2\\\frac{1}{2}\end{matrix}$

$4a-\frac{1}{2}=\frac{3}{2} \rightarrow a=\frac{1}{2}$

$y=\frac{1}{2}(x+2)^2-\frac{1}{2} \xrightarrow{1} \frac{1}{2}(9)-\frac{1}{2}=4$

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(۹) $S=-4$ $P=a$ $3a^2+2\beta^2=\frac{5}{2}(\alpha^2+\beta^2)+\frac{1}{2}(\alpha^2-\beta^2)$

$\frac{5}{2}(16-2a)+\frac{1}{2}(a-\beta)(\alpha+\beta)$

$90-5a+4\sqrt{9-a}=12\sqrt{2}+85 \rightarrow a=1$

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(۱۰) $\sqrt{\frac{1}{x_1}}+\sqrt{\frac{1}{x_2}}=5 \rightarrow \frac{1}{x_1}+\frac{1}{x_2}+2\sqrt{\frac{1}{x_1x_2}}=\frac{S}{P}+2\sqrt{\frac{1}{P}}$

$\frac{m+14}{1}+2\sqrt{39}=m+14+12=25 \rightarrow m=-1$

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

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