

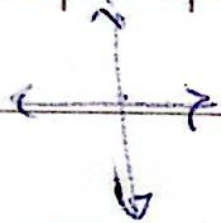
Subject:

النسب المتناهي

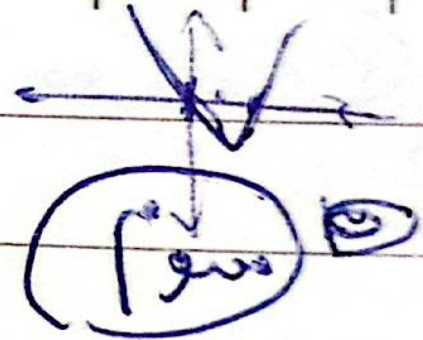
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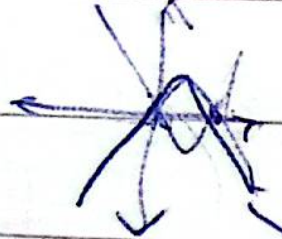
١) $\min_{x \in \mathbb{R}} f(x)$



$f(x) = x^2 - 2x$
 $\rightarrow x = 0$
 $\rightarrow x = 2$



٢) $\max_{x \in \mathbb{R}} f(x)$

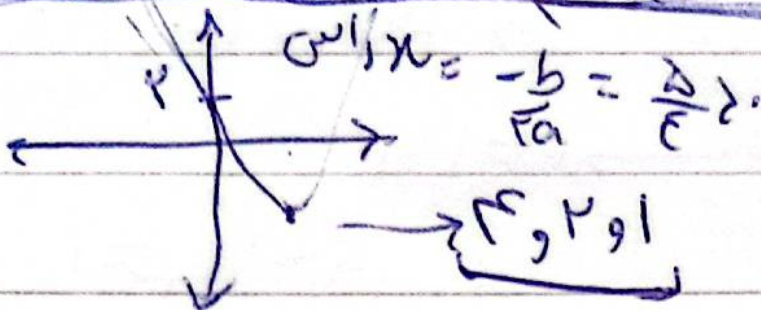


$f(x) = -x^2 + 2x$
 $\rightarrow x = 0$
 $\rightarrow x = 2$

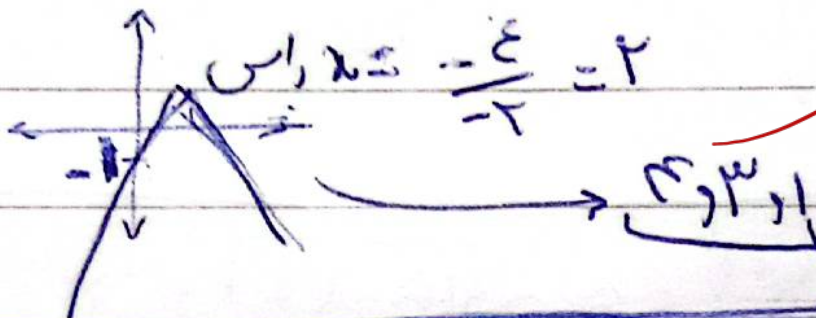
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② $\min \beta$



→ $\max \beta$



③ (الف) $S = \frac{1}{\sqrt{14}} = \frac{\sqrt{14}}{14}$ $S=1$ $P=-4$

ب) $\alpha^2 + \beta^2 = S^2 - 2P = 1 + 4 = 5$

ج) $\alpha^4 + \beta^4 = S^4 - 4SP = 1 + 4 = 5$

د) $\alpha^4 - \beta^4 = (\alpha - \beta)(\alpha^2 + \beta^2 + \alpha\beta) = (\sqrt{14})(5 + (-4)) = \sqrt{14}$

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

$x - ax + a^2 = 0 \rightarrow (x-1)^2 = x^2 - 2x + 1 \rightarrow a = \frac{1}{4}$
 $\frac{1}{4} \mid -1 \mid 1$
 $(0, \frac{1}{4})$

I, II $\rightarrow (0, \frac{1}{4})$

⑤ $\alpha + \beta = \epsilon \rightarrow \beta = \epsilon - \alpha$
 $\gamma\alpha^2 + \beta^2 - \epsilon\alpha = \nu \rightarrow \gamma\alpha^2 + (\epsilon - \alpha)^2 - \epsilon\alpha = \nu \rightarrow \gamma\alpha^2 - 2\epsilon\alpha + \epsilon^2 + \alpha^2 - \epsilon\alpha + \nu = 0$
 $\alpha^2 - \epsilon\alpha + \nu = 0 \rightarrow \alpha = \frac{\epsilon \pm \sqrt{\epsilon^2 - 4\nu}}{2}$
 $\alpha = \frac{\nu}{\epsilon} \quad \beta = 1$

$\frac{-9}{4} = \boxed{-\frac{3}{2}}$

⑥ $\frac{\nu - \gamma a + \gamma a + \nu}{2} = \Delta \rightarrow \boxed{(2, \nu)}$

$\nu - \gamma a > 0 \rightarrow a < \frac{\nu}{\gamma}, \gamma a + \nu > 0 \rightarrow a > -\frac{\nu}{\gamma}, a - \nu > 0 \rightarrow a > \nu$

$A = (9, 1) \quad B = (1, 9)$

$(x-A)^2 = -\epsilon a (y-\nu) \xrightarrow{(1,1)} 19 = 11a \rightarrow a = \frac{19}{11}$

$(x-A)^2 = -1(y-\nu) \quad (0-A)^2 = -1(y-\nu) \rightarrow y = \frac{1}{\wedge}$

④ $|a - \beta| = \frac{\sqrt{\Delta}}{|a|}$ $ax^r - ax - b \rightarrow x^r - x - \frac{b}{a} = 0$

$x^r - x - c = 0$ $\beta^r - \beta = -c$ $r\beta^{r-1} + d^r - \beta = \frac{1}{r}$

$s^r - r\beta - c = 1 - r\beta - c = 1 - r\beta - c = \frac{1}{r} \rightarrow c = 1$

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

① $y = a(x-h)^r + k$ $\frac{h}{r} \rightarrow a(x+r)^r - \frac{1}{r} \frac{1}{r}$

$y = \frac{1}{r}(x+r)^r - \frac{1}{r} \rightarrow \frac{1}{r}(9) - \frac{1}{r} = 8$

② $S = -4$ $p = a$ $r\alpha^r + r\beta^r = \frac{\Delta}{r}(\alpha^r + \beta^r) + \frac{1}{r}(\alpha^r - \beta^r)$

$\frac{\Delta}{r}(r^2 - ra) + \frac{1}{r}(a - \beta)(\alpha + \beta)$

$90 - \Delta a + 4\sqrt{9-a} = 1\sqrt{r} + \Delta \rightarrow a = 1$

③ $\sqrt{\frac{1}{x_1}} + \sqrt{\frac{1}{x_2}} = \Delta \rightarrow \frac{1}{x_1} + \frac{1}{x_2} + r\sqrt{\frac{1}{x_1 x_2}} = \frac{S}{p} + r\sqrt{\frac{1}{p}}$

$\frac{m+r}{1} + r\sqrt{r^2} = m+r + 1r = r\Delta \rightarrow m = -1$

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