$\frac{1-5}{2} = -2 \Rightarrow x_s$ ✓ $\quad \Big| -2 \quad -\frac{1}{2}$

$y = 2x^2 + 8 + 8x - \frac{1}{2}$ ⟶ $\div 2$: $x^2 + 4 + 4x - \frac{1}{4}$

$y = x^2 + 4x + 3{,}75$

-8 (1)

$y = a(x - x_s)^2 + y_s$

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

$\rightarrow \alpha = \frac{1}{2} \longrightarrow (1, \beta) \in f(x) \Rightarrow \beta = \frac{1}{2}(1+2)^2 - \frac{1}{2} \rightarrow \beta = 4$

-9 (2)

$x^2 + 6x + a = 0 \begin{cases} \alpha = -3 + \sqrt{9-a} \longrightarrow \alpha^2 = 18 - a - 6\sqrt{9-a} \\ \beta = -3 - \sqrt{9-a} \longrightarrow \beta^2 = 18 - a + 6\sqrt{9-a} \end{cases}$

$3\alpha^2 + 2\beta^2 = 90 - 5a - 6\sqrt{9-a} = 12\sqrt{2} + 85 \longrightarrow 5a + 6\sqrt{9-a} = 5 + 6\sqrt{8}$

$\longrightarrow \boxed{a = 1}$

$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = 5 \rightarrow \frac{\sqrt{\alpha} + \sqrt{\beta}}{\sqrt{\alpha\beta}} = 5 \longrightarrow \sqrt{\alpha} + \sqrt{\beta} = 5\sqrt{\alpha\beta}$

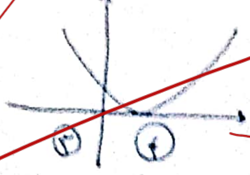
-10 (3)

$S + 2\sqrt{P} = 25P \rightarrow S + 2\sqrt{\frac{1}{36}} = \frac{25}{36} \longrightarrow S = \frac{25}{36} - \frac{1}{3} = \frac{13}{36}$

$\rightarrow \frac{m+14}{36} = \frac{13}{36} \longrightarrow \boxed{m = -1}$

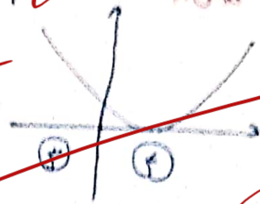
$mx^2 + 3x + 2 = -x^2 + 3x + 2 \rightarrow P = -2$

الف) ext_{min} | $x_s = \frac{1}{2}$ ✓
| $y_s = 0$



۱۳/۷۵

ب) ext_{max} | $x_s = 2$ ✓
| $y_s = 0$



۱۳/۷۵ — ۰/۵

الف) ext_{min} | $x_s = \frac{5}{4}$ ✓

$y_s = \frac{-(17 - 4a - 1a - 1)}{-4} = 3$ ($17 - 2 = 12$)

۱ و ۳ و ۴ ناحیه

ب) ext_{max} | $x_s = \frac{-4}{-2} = 2$ ✓

$y_s = -4 + 8 - 1 = 3$

۱ و ۳ و ۴ ناحیه

۰/۵

$x^2 - x - 3 = 0$ → $-\frac{b}{a} = +1 \Rightarrow +$ ، $\frac{c}{a} = -3 \Rightarrow \times$

$\alpha + \beta = 1$

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

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

• $\frac{\alpha + \beta}{\alpha - \beta} = \frac{+1}{\frac{\sqrt{\Delta}}{|a|}} \Rightarrow \frac{\sqrt{12}}{1} = \frac{1}{\sqrt{12}} = \frac{\sqrt{12}}{12}$

۱ — ۳

• $\alpha^2 + \beta^2 \Rightarrow (\alpha + \beta)^2 - 2\alpha\beta = 7$ ✓

• $\alpha^3 + \beta^3 = S^3 - 3SP = 1^3 - 3 \times 1 \times -3 = 1 + 9 = 10$ ✓

• $\alpha^3 - \beta^3 = (\alpha - \beta)(\alpha^2 + \beta^2 + \alpha\beta) = \frac{\sqrt{12}}{3}$

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

$y = (x - 2)(x^2 - ax + a)$
۲ ریشه — $x = 2$ — $\Delta < 0$

$a^2 - 4a < 0$
$a(a - 4) < 0$

$0 < a < 4$ I I ∪ II $= (0, 4]$

$0 < a < 4$

۰/۷۵

II $\Delta = 0$ $x^2 - 4x + 4 = (x - 2)^2$
$a = 4$

۲ — ۵

$\alpha + \beta = 4$
$\alpha\beta = -\frac{a}{3}$
$\beta = 4 - \alpha$

$(4 - \alpha)^2 - \alpha^2 - 4(4 - \alpha) = 7$
$2\alpha^2 + 16 - 8\alpha + \alpha^2 - 4\alpha = 7$
$3\alpha^2 - 12\alpha + 16 = 7$ $3\alpha^2 - 12\alpha + 9 = 0 \overset{\div 3}{\Rightarrow} \alpha^2 - 4\alpha + 3 = 0$
$(\alpha - 1)(\alpha - 3) = 0$

$\alpha\beta = 3 = -\frac{a}{3}$
$a = -9$

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

$\frac{7 - 2a + 2a + 3}{2} = b = 5 \Rightarrow x_s \Rightarrow y_s = 3$

$a = 3$

$y = a(x - x_s)^2 + y_s$

$a = \frac{1}{8}$

$a > 2 \Rightarrow 4, 5, 6 \ldots \times \Rightarrow a' \Rightarrow x < 0\ \times \Rightarrow$ غلط

۳ — ۴

$ax^2 - ax - b = 0$ $\alpha + \beta = \frac{a}{a} = 1$
$\alpha + \beta = 1$ $\alpha = 1 - \beta$
$40(1 - \alpha)^2 + 20\alpha^2 - 20(1 - \alpha) = 17$
$60\alpha^2 - 60\alpha + 3 = 0$ $\alpha^2 - \alpha + \frac{1}{20} = 0 \Rightarrow 1 - 4(1)(\frac{1}{20}) = \frac{4}{5}$
$|\alpha_1 - \alpha_2| = \frac{\sqrt{\Delta}}{|a|} = \frac{\frac{2}{\sqrt{5}}}{1} = \frac{2}{\sqrt{5}}$

۳ — ۷