

B) \bar{m} (حتم)

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نوعاً سلباً

الف) $a = -1 < 0 \Rightarrow \min \Rightarrow m_s = \frac{-b}{2a} = \frac{1}{-2} = -\frac{1}{2} \Rightarrow y_s = 1 \times \frac{1}{-2} - \frac{1}{4} = -\frac{1}{4} \Rightarrow$ \Rightarrow $\frac{1}{2}$ و $\frac{1}{4}$ (1)

ب) $a = -1 < 0 \Rightarrow \min \Rightarrow m_s = \frac{-b}{2a} = \frac{-1}{-2} = \frac{1}{2} \Rightarrow y_s = -1 \times \frac{1}{2} + 1 = \frac{1}{2} \Rightarrow$ \Rightarrow $\frac{1}{2}$ و $\frac{1}{2}$ (2)

ج) $a = 1 > 0 \Rightarrow \min \Rightarrow m_s = \frac{-b}{2a} = \frac{1}{2} \Rightarrow y_s = 1 \times \frac{1}{2} - \frac{1}{4} = \frac{1}{4} \Rightarrow$ \Rightarrow $\frac{1}{2}$ و $\frac{1}{4}$ (3)

د) $a = -1 \Rightarrow \max \Rightarrow m_s = \frac{-b}{2a} = \frac{1}{-2} = -\frac{1}{2} \Rightarrow y_s = -1 \times \frac{1}{2} + 1 = \frac{1}{2} \Rightarrow$ \Rightarrow $\frac{1}{2}$ و $\frac{1}{2}$ (4)

$m^2 - m - 1 = 0 \Rightarrow \alpha, \beta \Rightarrow \alpha + \beta = 1 \quad \alpha - \beta = \frac{\sqrt{5}}{2} = \frac{\sqrt{5+1}}{2} = \sqrt{3} \Rightarrow$ الف) $\frac{1}{\sqrt{10}} = \frac{\sqrt{10}}{10}$ (5)

ب) $\alpha^2 + \beta^2 = 3^2 - 1 = 10 \Rightarrow \alpha^2 - \beta^2 = (\alpha - \beta)(\alpha + \beta) = \sqrt{3} \times 1 = \sqrt{3}$ (6)

$\Delta < 0 \Rightarrow$ $a^2 - 4a < 0 \Rightarrow a(a-4) < 0 \Rightarrow \frac{a}{a-4} < 0 \Rightarrow a \in (0, 4)$ (7)

$4m^2 - 14m + 5 = 0 \Rightarrow 2\alpha^2 + \beta^2 - 7\alpha = 0$ (8)

$\alpha + \beta = 7 \Rightarrow m^2 - 7m - \frac{5}{2} = 0 \Rightarrow \alpha^2 - 7\alpha - \frac{5}{2} = 0 \Rightarrow -7\alpha = -\alpha^2 + \frac{5}{2}$ (9)

$2\alpha^2 + \beta^2 - \alpha^2 + \frac{5}{2} = 7 \Rightarrow \alpha^2 + \beta^2 + \frac{5}{2} = 7 \Rightarrow 14 + \frac{5}{2} + \frac{5}{2} = 7 \Rightarrow a = -9$ (10)

$\Rightarrow \alpha^2 - 7\alpha + \frac{5}{2} = 0 \Rightarrow (m-1)(m-5) = 0 \Rightarrow m = 1 \text{ or } 5$ (11)

$y_A = y_B \Rightarrow m_s = \frac{m_A + m_B}{2} = \frac{1+5}{2} = 3 \Rightarrow y_s = 3 - 2 = 1 \Rightarrow$ $\frac{1}{2}$ و $\frac{1}{2}$ (12)

$y = a(m - m_s)^2 + y_s \Rightarrow 1 = a(m - 3)^2 + 1 \Rightarrow a \times (9 - 6m + 9) + 1 = 1 \Rightarrow a \times (18 - 6m) = 0$ (13)

$1 = 9a + 1 \Rightarrow a = \frac{1}{9} \Rightarrow y = \frac{1}{9} \times (9 - 6m)^2 + 1 = \frac{1}{9} \times 36(3 - 2m)^2 + 1 = 4(3 - 2m)^2 + 1$ (14)

$a m^2 - a m - b = 0 \Rightarrow 4\beta^2 - 4\beta - b = 0 \Rightarrow 4\alpha^2 - 4\alpha - b = 0$ (15)

$\alpha + \beta = 1 \Rightarrow \alpha = 1 - \beta \Rightarrow 4(1 - \beta)^2 - 4(1 - \beta) - b = 0 \Rightarrow 4(1 - 2\beta + \beta^2) - 4 + 4\beta - b = 0$ (16)

$4 - 8\beta + 4\beta^2 - 4 + 4\beta - b = 0 \Rightarrow 4\beta^2 - 4\beta - b = 0$ (17)

$1 - 2(\frac{4 \pm 4\sqrt{b}}{4}) = \frac{\pm 4\sqrt{b}}{4} \Rightarrow |\alpha - \beta| = \frac{\sqrt{b}}{2} \Rightarrow \beta = \frac{1 \pm \sqrt{b}}{2}$ (18)

$m_s = \frac{-b+1}{2} = -2 \Rightarrow y_s = \frac{1}{4} \Rightarrow y = a(m - m_s)^2 + y_s \Rightarrow \frac{1}{4} = a(0+2)^2 - \frac{1}{4}$ (19)

$\beta = 1 + 1 + \frac{1}{4} = \frac{9}{4} \Rightarrow \frac{1}{4} = a(4)^2 - \frac{1}{4} \Rightarrow a = \frac{1}{4}$ (20)

$m^2 + 4m + a = 0 \Rightarrow \alpha\beta = a \Rightarrow a > 0$ (21)

$\alpha^2 + 4\alpha + a = 0 \Rightarrow \alpha + \beta = -4 \Rightarrow \beta = -4 - \alpha \Rightarrow 4\alpha^2 + 4\alpha + a = 0$ (22)

$4\alpha^2 + 4\alpha + a = 0 \Rightarrow 4\alpha^2 + 4\alpha + a = 0$ (23)

$4\alpha^2 - (m+1)\alpha + 1 = 0 \Rightarrow \alpha, \beta \Rightarrow \frac{1}{\sqrt{\beta}} + \frac{1}{\sqrt{\alpha}} = a \Rightarrow \frac{\sqrt{\beta} + \sqrt{\alpha}}{\sqrt{\beta}\sqrt{\alpha}} = a$ (24)

$\alpha\beta = \frac{1}{4}$ (25)

$\alpha + \beta = \frac{m+1}{4} \Rightarrow \frac{m+1}{4} = \frac{1}{4} \Rightarrow m+1 = 1 \Rightarrow m = -1$ (26)

$-m^2 + 4m + 1 = 0 \Rightarrow m = -1$ (27)

$\alpha + \beta = \frac{1}{4} \Rightarrow \frac{1}{4} = \frac{1}{4} \Rightarrow \alpha + \beta = \frac{1}{4}$ (28)

$\alpha + \beta + \frac{1}{\sqrt{\alpha}\sqrt{\beta}} = \frac{1}{4} + \frac{1}{\sqrt{\alpha}\sqrt{\beta}} = \frac{1}{4} + \frac{1}{\sqrt{\alpha\beta}} = \frac{1}{4} + \frac{1}{\sqrt{1/4}} = \frac{1}{4} + 2 = \frac{9}{4}$ (29)

$P = m_1 m_2 = (-1)$ (30)