۱۹ آذر

۱) الف) $\frac{-b}{2a} = \frac{-\Delta}{2a}$ $\quad \frac{-b}{2a} \cdot \left(\frac{2}{2}\right) = \frac{-\Delta}{2a}$ $\quad x$

$b^2 - 4ac$

$\Delta = 4(-3)(-1)$

$2\left(\frac{2}{4}\right)^2 - 2\left(\frac{2}{4}\right)$

ب) $\frac{-b}{2a} = 2$ $\quad x$

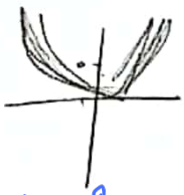
y

$3\left(\frac{1}{4}\right)^2 - 2\left(\frac{1}{4}\right)$

$\frac{1}{4} \times x$

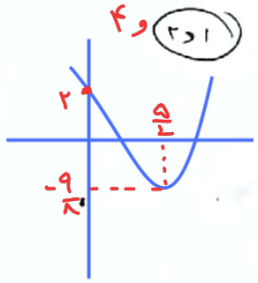
$\frac{1}{4} - \frac{2}{4} = -\frac{1}{4}$

۲) الف) $\frac{5}{4} = x$



$2\left(\frac{5}{4}\right)^2 - 5\left(\frac{5}{4}\right) + 2 =$

$\frac{25}{8} - \frac{25}{4} + 2 = -\frac{25}{8} + 2 = -\frac{9}{8}$



$\frac{18}{12} \quad \frac{50}{12} + \frac{-15}{4} \quad \frac{8}{4} + \frac{24}{4}$

ب) $\frac{-b}{2a} = 1$

$-b = 2a$

$-8 = 2a + 8$

$a = -3$

۱ و ~~۴~~

۲) ۱٫۲۵

الف) $\alpha^2 - \alpha - 3 = 0$

$\beta^2 - \beta - 3 = 0$

ب) $1 - 4(1)(-3) = 13$

ج) $\frac{-1}{\sqrt{\Delta}} \quad \frac{-1}{12}$

$\frac{-1}{12}$

الف) $\frac{\alpha+\beta}{\alpha-\beta} = \frac{-b}{a} = 1$

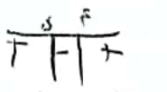
$\frac{\sqrt{\Delta}}{|a|} = \sqrt{13}$

$\frac{1}{\sqrt{13}}$

ج) $\alpha^3 + \beta^3 = s^3 - 3sp = 1^3 - 3(1)(-3) = 10$

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

$x^2 - ax + a$ بیشتر $\rightarrow$ $\Delta < 0$ $\quad b^2 - 4ac < 0$ $\quad a^2 - 4a < 0$ $\quad a(a-4) < 0$



$(0, 4)$

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

$]-\infty, 0[\cup]4, +\infty[$

$]0, 4[\rightarrow [0, 4]$

$S = \frac{-b}{a}$ $P = \frac{c}{a}$

۵:

$\alpha + \beta = \frac{-b}{a}$ $\alpha + \beta = \frac{12}{3} = 4$ $\beta = 4 - \alpha$

$2\alpha^2 + \beta^2 - 5\alpha = 7 \longrightarrow 2\alpha^2 + (4-\alpha)^2 - 5\alpha = 7 \longrightarrow 2\alpha^2 + 16 + \alpha^2 - 8\alpha - 5\alpha = 7$

$3\alpha^2 - 13\alpha + 9 = 0$ $\alpha^2 - 5\alpha + 3 = 0 \longrightarrow (a-1)(a-3) = 0$

$\alpha = 1$ $\alpha = 3$ $a = -9$

$\beta = 1$ $2\alpha = 3$

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

۶:

$y = m(x-a)^2 + 3$ $y = -\frac{1}{8}(x-5)^2 + 3$

$m = -\frac{1}{8}$

$y = \frac{-25}{8} + 3 = -\frac{1}{8} \rightarrow \frac{1}{8}$ ج

۷:

$a\alpha^2 - a\alpha - b = 0$ $4\beta^2 + 20\alpha^2 - 20\beta = 17$

$a\beta^2 - a\beta - b = 0$

$\beta = \frac{10 \pm \sqrt{80}}{20}$ $20\beta^2 - 20\beta + 1 = 0$ $4\beta^2 + 20(1-\beta)^2 - 20\beta - 17 = 0$ ج

$\alpha - \beta = 1 - 2\beta = \frac{2}{\sqrt{5}}$

۸:

$x = -\frac{a+1}{2} = -2$ $f(x) = a(x+2)^2 - \frac{1}{2}$

$(0, \frac{3}{4})$

$\frac{3}{4} = a(0+2)^2 - \frac{1}{2} \longrightarrow a = \frac{1}{4}$

$(0, \beta)$ $\beta = \frac{1}{4}(1+2)^2 - \frac{1}{2}$ $\beta = 2$ ج

۹:

$3\alpha^2 + 2\beta^2 = \frac{5}{2}(\alpha^2 + \beta^2) + \frac{1}{2}(\alpha^2 - \beta^2) = \frac{5}{2}(49 - 2a) + \frac{1}{2}(\alpha - \beta)(\alpha + \beta)$

$= 90 - 5a + 2\sqrt{9} - a$ $a = 1$ ج

$12\sqrt{7} + 86$

۱۰:

$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = 0 \rightarrow \frac{\sqrt{\alpha} + \sqrt{\beta}}{\sqrt{\alpha\beta}} = 0 \rightarrow \sqrt{\alpha} + \sqrt{\beta} = 0\sqrt{\alpha\beta}$

$S + 2\sqrt{P} = 20P \rightarrow S + 2\sqrt{\frac{1}{36}} = \frac{20}{36} - \frac{1}{36} = \frac{19}{36}$

$\frac{m+14}{36} = \frac{19}{36}$ $m = -1$

$-x^2 + 3x + 2$ $P = \frac{2}{-1}$ (+) ج