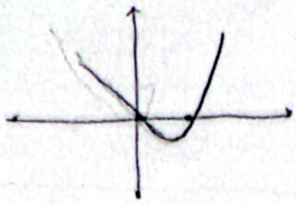
سید محمد لویان

① الف) ناحیه ۳



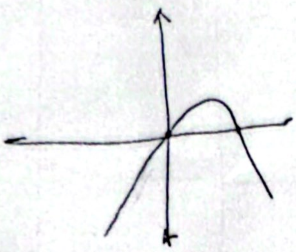
$x(3x-2)$

$x=0$

$3x=2$

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

ب) ناحیه ۲

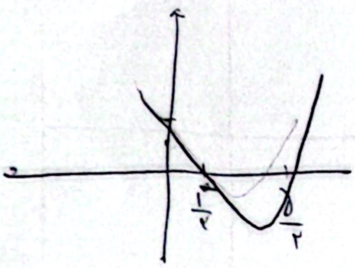


$x(-x+4)$

$x=0$

$x=4$

②



$x^2-5x+4=0$

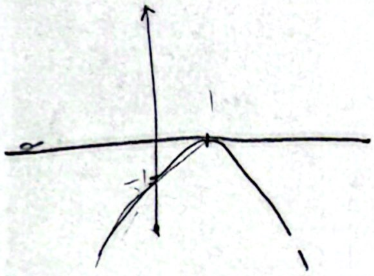
$(x-1)(x-5)=0$

$x=1 \quad x=5 \Rightarrow \frac{1}{2}, \frac{5}{2}$

ناحیه ۱، ۲ و ۳

ب)

۱، ۳، ۴



$y=-(x-1)^2$

$x=1$

۲) الف)

$\dfrac{\alpha^2+\beta^2}{(\alpha+\beta)^2} = \dfrac{\alpha+\beta}{\alpha+\beta}$

$-\dfrac{b}{a} = 1$

$\dfrac{\sqrt{\Delta}}{|a|} = \dfrac{\sqrt{1-4(-3)(1)}}{1} = \sqrt{13} = \dfrac{1}{\sqrt{13}}$

ب)

$\alpha^2+\beta^2 = (\alpha+\beta)^2 - 2\alpha\beta$

$\dfrac{c}{a} = -3$

$1 - 2(-3) = 7$

ج) ۲)

$(\alpha+\beta)(\alpha^2+\beta^2-\alpha\beta)$

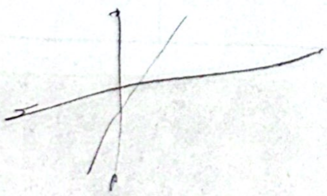
$(1)(7 - (-3)) = 10$

د)

$\alpha^3 - \beta^3 = (\alpha-\beta)(\alpha^2+\beta^2+\alpha\beta)$

$(\sqrt{13})(7-3) = 4\sqrt{13}$

۴)



① $\Delta < 0 \Rightarrow a^2 - 4(a) < 0$

$a^2 - 4a < 0$

$a(a-4) < 0$

$0 \quad 4$

$+ \;|\; - \;|\; +$

$(0, 4)$ ؛ $1, 2, 3$

$\Rightarrow 1, 2, 3, 4$

② $x^2 - ax + a = (x-2)^2$

$x^2 - 4x + 4$

$a = 4$

$\Rightarrow (0, 4]$

$\alpha=0$

(5)

$3\alpha^2-12\alpha-\alpha=0$

$3\alpha^2-13\alpha=0$

$\alpha(3\alpha-13)=0$

$\alpha=0$, $\alpha=\frac{13}{3}$ $\Rightarrow$ $\beta^2=7$, $\beta=\pm\sqrt{7}$

$(\alpha^2+\beta^2)+\alpha^2-4\alpha=7$

$S^2-2P+\frac{a}{3}=7 \Rightarrow$

$16-2(-\frac{a}{3})+\frac{a}{3}=7$

$a=-9$

$3\alpha^2-12\alpha=a \Rightarrow \alpha^2-4\alpha=\frac{a}{3}$

$3x^2-12x+9=0$

$\alpha=1$

$\beta=3$

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

(6)

$y=ax^2+bx+c$

$S(Z,Z,-2)$

$\frac{-b}{2a}=Z$

$\frac{-b}{2a}=\frac{-\Delta}{4a}$

$\frac{-\Delta}{4a}=Z-2$ $\Rightarrow$ $\frac{-\Delta}{4a}+2=Z$

$\frac{-2b+\Delta}{4a}=0$

$-2b+\Delta=0$

$-2b+b^2-4ac$

$a x^{2} - ax = b$

$bx^{2} - ax = b$

$(2\cdot\beta^{2} + 2\cdot\alpha^{2}) + (2\cdot\beta^{2} - 2\cdot\beta) = 17$

$2\cdot(\beta^{2} - \alpha^{2})$ $\quad \frac{2\cdot b}{a}$

$ax^{2} - ax - b = 0$

$x^{2} - x - \frac{b}{a} = 0 \Rightarrow \beta^{2} - \beta - \frac{b}{a} = 0$

$\beta^{2} - \beta = \frac{b}{a}$

$2\cdot\beta^{2} - 2\cdot\beta = \frac{2\cdot b}{a}$

$\frac{\sqrt{a^{2}+4ab}}{a}$

$2\cdot(S^{2} - 2P) + \frac{2\cdot b}{a} = 17$

$2\cdot(1 + \frac{2b}{a}) + \frac{2\cdot b}{a} = 17 \Rightarrow \frac{6\cdot b}{a} = -3$

$|\alpha - \beta| = \frac{\sqrt{a^{2}+4ab}}{a} = \sqrt{\frac{a^{2}+4ab}{a^{2}}} \quad \frac{b}{a} = -\frac{1}{20}$

$\frac{2\sqrt{20}}{10}$

$\sqrt{1 + \frac{4b}{a}} = \sqrt{1 + 4(-\frac{1}{20})} = \sqrt{1 - \frac{1}{5}} = \frac{2}{\sqrt{5}}$

$8a - 4c = 0$

$8a = 3$

$a = \frac{3}{8}$

$\frac{\sqrt{a}}{\sqrt{10}}$

$\frac{3}{8}x^{2} + \frac{3}{2} + 3$

$x_{s} = \frac{-5+1}{2} = -2$

$y = 1/375x^{2} + 5/5x + \frac{3}{2}$

$x = 1 \Rightarrow 1/375$

(1)

$\frac{-b}{2a} = -2 \quad b = 4a$

$4a - c = 3$

$4a = 32a^{2} - 8ac$

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

$4a = 2\Delta$

$4a = 2b^{2} - 8ac$

$4a = 8a(4a - c)$

$4a = 2(16a^{2}) - 8ac$ $\quad 4a - c = 3$ $\quad a = 1$

④

$\frac{-a+1}{2} = -2 = n$

$\frac{-b}{2a} = -2$

$-2a = -b$

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

$2a = 2\Delta$

~~$b = 2b^2 = 4ac$~~

$2a = (b)^2 - 8ac$

$4a = 9(4a^2 - 8ac$

$4a = 8a(4a - 3c)$

$0 = 2(4a - c)$

$0 = 8a - 2c$

$0 = 8a - 2(\frac{3}{2})$

$3 = 8a$

$\frac{3}{8} = a \Rightarrow b = 1/\Delta$

$y = \frac{3}{8}(1) + \frac{\frac{3}{2}(1)(\frac{3}{2})(1)}{3}$

$3\frac{3}{8}$

⑨

$\alpha^2 + 2\alpha^2 + 2\beta^2 = 12\sqrt{2} + 8\omega \Rightarrow \alpha^2 + 2(\delta^2 - 2\beta) = 12\sqrt{2} + 8\Delta$

$(\alpha^2 + \beta^2)^2 - 2\alpha^2\beta^2$

$\alpha^2 + 2(49 - 2q) = 12\sqrt{q} + 8\Delta$

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

$\frac{\sqrt{\alpha}}{\alpha} + \frac{\sqrt{\beta}}{\beta} = \frac{\sqrt{\alpha}\beta + \sqrt{\beta}\alpha}{\alpha\beta}$

$A = \frac{\alpha}{\alpha^2} + \frac{\beta}{\beta^2} + \frac{2\sqrt{\alpha\beta}}{\alpha\beta}$

$A^2 = \frac{\alpha}{\alpha^2} + \frac{\beta}{\beta^2} + \frac{2\sqrt{\alpha\beta}}{\alpha\beta}$

$n^2 + 4n + a = 0$

$a = -2 - \sqrt{9 - a} \Rightarrow$

$a^2 = 4 + 9 - a + 4\sqrt{9 - a}$

$18 - a + 4\sqrt{9 - a} + 4 - 2a = 12\sqrt{2} + 8$

$4\sqrt{9 - a} - 3a = 12\sqrt{2} - a$

$a = 1$ ✓

$$\frac{\alpha+\beta}{\alpha\beta}+\frac{۲\sqrt{\alpha\beta}}{\alpha\beta}$$

$$\frac{\frac{m+۱۴}{۳۶}}{\frac{۱}{۳۶}} + \frac{۳\times\frac{۱}{۹}}{\frac{۱}{۳۶}} = ۵$$

$$\frac{۳۶(m+۱۴)}{۳۶}+۱۲=۵$$

$m+۱۴+۱۲=۲۵$

$m=-۱$

$۳۶m+۵۰۴+۱۲=۵$

$\frac{c}{a}=۲$

۶) انیاس.

$a-۲$ عرض صحیح ⟸ a عرض صحیح

$$\frac{۷-۲a+۲a+۳}{۲}=۵=x_{راس}$$

$\Rightarrow b=x'_{راس}=۵$

$y'_{راس}=۳$

$y=a(x-x_1)^2+y$

$y=(x-۵)^2+۳$

$y=x^2+۲۵-۱۰x+۳$

$y=x^2-۱۰x+۲۸$ — جواب