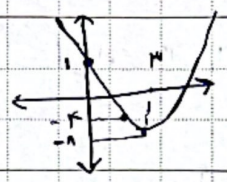
تاریخ:

ABP VIBRO
Vibration Measurement Systems Manufacturer

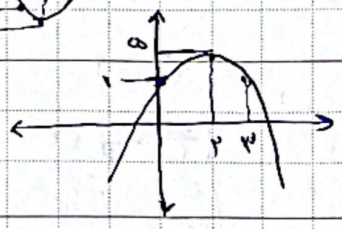
① الف) $y = x^2 - 4x + 1 \rightarrow a > 0$ $\quad Min \left| \frac{-b}{2a} = 1 \right.$ $\quad \left| \frac{-\Delta}{4a} = -1 \right.$ $\quad \left| \begin{matrix} 1 \\ -1 \end{matrix} \right.$

ب) $y = -2x^2 + 4x - 5 \Rightarrow \left| \begin{matrix} 3/4 \\ -11/8 \end{matrix} \right.$

② الف) $y = x^2 - 4x + 1$ $\quad \left| \begin{matrix} 3 \\ -1 \end{matrix} \right.$ $\quad \left| \begin{matrix} 1 \\ -4 \end{matrix} \right.$ $\quad \left| \begin{matrix} 0 \\ 1 \end{matrix} \right.$



ب) $y = -x^2 + 4x + 1$ $\quad \left| \begin{matrix} 0 \\ 1 \end{matrix} \right.$ $\quad \left| \begin{matrix} 3 \\ 4 \end{matrix} \right.$



③ $4x^2 + kx^2 - 9x - 2 = 0$ $\quad \beta^2 - \beta - 2 = 0$ $\quad (\beta - 2)(\beta + 1) = 0$ $\quad \begin{cases} \beta_1 = -1, \alpha_1 = 2 \\ \beta = 2, \alpha = -1 \end{cases}$

$\alpha\beta = -2$, $\alpha + \beta = -1$, $\alpha = -1 - \beta$ $\Big\}$ $(-1-\beta)\beta = -2$

$x_1, x_2 \rightarrow -1, 2$ $\quad 4 \times 8 + 4k - 12 - 2 = 0 \rightarrow 12 + 4k = 0 \quad k = -3$

$-4 + k + 9 - 2 = 0 \quad k + 3 = 0 \quad k = -3$

④ $x^2 - 3mx + m = 0$ $\quad \underbrace{3m}$ $\quad \underbrace{-2\sqrt{m}}$

$|\sqrt{\alpha} - \sqrt{\beta}| = 1 \longrightarrow \alpha + \beta + (-2\sqrt{\alpha\beta}) = 1$

$3m - 2\sqrt{m} - 1 = 0$ $\quad (2\sqrt{m} + 1)(\sqrt{m} - 1) = 0$ $\quad \begin{cases} \sqrt{m} = 1 \checkmark \Rightarrow m = 1 \\ 2\sqrt{m} = -1 \times \end{cases}$

$m = 1$ $\quad 2x^2 - x - 1 = 0 \longrightarrow \alpha\beta = \boxed{-1/2}$

⑤ $S = \frac{m\left(\frac{\sqrt{\Delta}}{|a|}\right)}{2} = 3/4$ $\quad \frac{m\left(\sqrt{(m+2)^2 - 4m}\right)}{2} = 3/4$

$m\left(\sqrt{(m-2)^2}\right) = 3 \Rightarrow m(|m-2|) = 3$ $\quad m < 2 \rightarrow m^2 - 2m + 3 = 0 \rightarrow m = 3$

$m > 2 \rightarrow m^2 - 2m - 3 = 0$

$3 = m \longrightarrow y = x^2 - mx + 1 = x^2 - 3x + 1$ $\quad \frac{-b}{2a} = \boxed{3/2}$

⑥ $y = ax^2 + 3x + a$ $\quad y_{min} = 7/8 \Rightarrow \underline{a > 0}$

$\frac{-\Delta}{4a} = 7/8 = y \longrightarrow \frac{-(9 - 4a^2)}{4a} = 7/8$ $\quad -2(9 - 4a^2) = 7a$ $\quad 8a^2 - 7a - 18 = 0$

$\Delta = 49 + 4 \times 18 \times 8 = 49^2$ $\quad a_1, a_2 = \frac{7 \pm \sqrt{49^2}}{16} \rightarrow \begin{cases} 32/16 = 2 \rightarrow \boxed{a = 2} \\ -18/16 \rightarrow \underline{< 0 \times} \end{cases}$

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⑦ $x^2-(a+1)x+a=0$ $\frac{\sqrt{\Delta}}{a}=2$ $\sqrt{(a+1)^2-4a}=2$ $(a-1)^2=4$

8:00 $(a-3)(a+1)=0 \rightarrow a=-1, a=3 \Rightarrow$ if $a=1 \Rightarrow x=\pm 1 \notin W$

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

9:00 $a=3$

$P_1=b=-\frac{3}{4}$ $|P_2-P_1|=\frac{3}{4}-\frac{1}{4}=\boxed{\frac{1}{2}}$

10:00 ⑧

① $y=-ax^2+ax+2$ $\left|\begin{array}{l}\frac{-a}{-4a}=\frac{1}{4}\\ \frac{-a}{4}+\frac{a}{2}+2=\frac{a+8}{4}\end{array}\right.$

② $y=4ba^2-ba-1$ $\left|\begin{array}{l}\frac{b}{6a}\\ \frac{3b}{14}\end{array}\right.$ $\left|\begin{array}{l}\frac{1}{4}\\ \frac{-(b+8)}{8}\end{array}\right.$

③ $\frac{3b}{4}-\frac{b}{2}-1=\frac{a+8}{4} \rightarrow \frac{a+8}{4}=-1 \Rightarrow \boxed{a=-12}$

④ $\frac{-a}{14}+\frac{a}{4}+1=\frac{-(b+8)}{8}=-\frac{a+4a+24}{14}$

11:00 $\frac{3a+12}{14} \Rightarrow 2=(b+8) \Rightarrow b-a=9$

12:00 ⑨ ?

⑩ $a+b=S$ $ab=P$

$S=(a^2+b^2-12)=S^2-2P-12$

$a+b-1=S-1$ $P=S-1$ $S^2-2(S-1)-12=S$

$S^2-2S-10=S$

14:00 $S^2-2S-10=0$ $(S-5)(S+2)=0$ $S=5 \rightarrow a+b=5$ ✓ ✗

$S=-2$

15:00 $a,b \in N \rightarrow ab=P>0$ $S=5$ $P=4$ $a+b=5$

$S=-2$ $P=-24$

16:00

17:00

18:00