(۱) $\frac{\Delta y}{\Delta x}$

الف) $m_{AB} = \frac{-2-2}{5-4} = -4$ $\quad y-2 = -4x+16$

$y = -4x+18$

ب) شیب $= \frac{-a}{b} = -3$ $\quad y-2 = -3(x-4)$

$y-2 = -3x+12 \rightarrow y = -3x+14$

ج) شیب خط داده شده $m = \frac{-a}{b} = \frac{-1}{3}$ $\quad \cdots \longrightarrow$ شیب خط عمود $= 3$

$y-2 = 3(x-4) \longrightarrow y = 3x-10$

$\underbrace{3(x-4)}_{3x-12}$

د) $\tan_{(60)} = m_{\text{شیب}} = \sqrt{3}$ $\quad y-2 = \sqrt{3}(x-4)$

$y = \sqrt{3}x - 4\sqrt{3} + 2$

$y = \sqrt{3}x - 2(2\sqrt{3}+1)$

(۲) الف) فاصله دو نقطه = $\sqrt{(\Delta x)^2+(\Delta y)^2} = \sqrt{9+16} = 5$

ب) $d = \frac{|16+12-31|}{\sqrt{9+16}} = \frac{15}{5} = 3$

(۳) $4x+6y \overset{c}{\boxed{-8}} = 0$

$2\times(2x+3y-6=0)$ $\quad y = 4x+6y-10$

$4x+6y \underset{c'}{\boxed{-12}} = 0$ $\quad \frac{-8-12}{2} = -10$

$\frac{c+c'}{2}$

(۴) $4x+6y-8=0$

$4x+6y-12=0$ ضرب در ۲ کردم

$d = \frac{|c-c'|}{\sqrt{16+36}} = \frac{4}{\sqrt{52}} = \frac{4\sqrt{52}}{52}$ $\quad \left(|-8-(-12)| = 4\right)$

$\frac{4\sqrt{52}}{52} = \frac{2\sqrt{13}}{13}$

با آن داده. $|2x+3y-3| = |3x-2y-1|$

(۴) $\frac{|2x+3y-3|}{\sqrt{4+9}} = \frac{|3x-2y-1|}{\sqrt{9+4}}$

(۱) $2x+3y-3 = 3x-2y-1$

$5y-x = 2$

(۲) $2x+3y-3 = -3x+2y+1$

$5x+y = 4$

(۵) $y+3x = 3 \longrightarrow m = \frac{-3}{1} = -3$

$y-2x = 5 \longrightarrow m' = \frac{+2}{1} = 2$

$\tan\alpha = \left|\frac{-5}{1+(-3\times 2)}\right| = 1$

$\alpha = 45 \quad \beta = 180-45 = 135$

(۶) الف) $AB = \sqrt{64+36} = \sqrt{\ } = 10$

ب) نقطه وسط: $x = \frac{-5+3}{2} = -1$ ، $y = \frac{4+(-2)}{2} = 1$

(۷) الف) $x = \frac{3-2-10}{3} = \frac{-9}{3} = -3$

$y = \frac{-13+3+1}{3} = \frac{-9}{3} = -3$

ب) $S = \frac{1}{2}\left|x_A(y_B-y_C) + x_B(y_C-y_A) + x_C(y_A-y_B)\right| \Rightarrow$

$\frac{1}{2}\left|\underbrace{3(4-(-13))}_{48} + \underbrace{-2(-13-1)}_{28} + \underbrace{-10(1-3)}_{20}\right| =$

$\frac{1}{2}\times 96 = 48$

موضوع: تاریخ: / /

الف) $-y = \frac{2x+1}{4x-3} \rightsquigarrow y = \frac{-2x-1}{3-4x}$ ①

ب) $y = \frac{-2x+1}{-4x-3}$

ج) $x = \frac{3y+1}{4y-3}$ $\quad 4xy - 2x = 3y + 1$

$-2x - 1 = 3y - 4xy$

$-2x - 1 = y(3 - 4x)$

$y = \frac{-2x-1}{3-4x}$

د) $-x = \frac{-2y+1}{-4y-3} \rightsquigarrow y = \frac{1-2x}{2x+2}$

الف) $\begin{cases} x_1 = x - 2 \rightarrow x = x_1 + 2 \\ y_1 = y + 3 \rightarrow y = y_1 - 3 \end{cases}$ $\quad y_1 - 3 = \frac{2(x_1+2)+1}{x_1+2-3}$ ⑨

$y_1 = \frac{5x_1+2}{x_1-1} \leftsquigarrow y_1 = \frac{2x_1+5}{x_1-1} + 3$

(10) الف)

$\begin{cases} 2x + 4y = 2 \\ x - 5y = 1 \end{cases} \times -2$

$-2x + 10y = -2$

$19y = -1$

$y = -\frac{1}{19}$ $\quad x - 5(-\frac{1}{19}) = 1$

$x = 1 - \frac{5}{19} \rightarrow x = \frac{14}{19}$

ب) $x = -\frac{\frac{14}{19}}{-19} = \frac{14}{19}$ $\quad \begin{vmatrix} a & b \\ a' & b' \end{vmatrix} = \begin{vmatrix} 3 & 2 \\ 5 & -1 \end{vmatrix} = -3 - 10 = -19$

$y = \frac{1}{-19} = -\frac{1}{19}$ $\quad \begin{vmatrix} b & c \\ b' & c' \end{vmatrix} = \begin{vmatrix} 2 & 3 \\ -1 & 3 \end{vmatrix} = 6 + 3 = 9$

$14 \rightarrow -3$

موضوع: تاریخ: / /

$\begin{cases} x_1 = x - 2 \rightsquigarrow x = x_1 + 2 \\ y_1 = y - 2 \rightsquigarrow y = y_1 + 2 \end{cases}$ ← ثبت

$y_1 + 2 = \frac{2(x_1+2)+1}{x_1+2-2}$

$y_1 + 2 = \frac{2x_1+5}{x_1} \rightarrow y_1 = \frac{2x_1+5}{x_1} - 2$

$y_1 = \frac{2x_1 + 5 - 2x_1}{x_1} = \frac{5}{x_1}$

استفاده از دترمینان:

$\begin{vmatrix} a & c \\ a' & c' \end{vmatrix} = \begin{vmatrix} 2 & 2 \\ 1 & 1 \end{vmatrix} = 2 - 2 = 0$