(۱۹)

آرمان بابایی یازدهم دفتر ۸ تکلیف شماره ۱۵

۱- الف) $m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{2-(-2)}{4-5} = -4$ $\quad y - y_0 = m(x - x_0) \rightarrow y - 2 = -4(x-4)$

$\rightarrow y = -4x + 18$ (۲)

ب) $2y + 6x = -1 \rightarrow y = -3x - \frac{1}{2} \rightarrow m = -3$ $\quad y - y_0 = m(x-x_0) \rightarrow y - 2 = -3(x-4)$

$\rightarrow y = -3x + 14$

ج) $x + 3y = 1 \rightarrow y = -\frac{1}{3}x + \frac{1}{3} \rightarrow m = -\frac{1}{3} \rightarrow m' = 3$ $\quad y - y_0 = m(x-x_0) \rightarrow y - 2 = 3(x-4)$

$\rightarrow y = 3x - 10$

د) $m = \tan\frac{\pi}{3} = \sqrt{3} \rightarrow y - y_0 = m(x-x_0) \rightarrow y - 2 = \sqrt{3}(x-4) \rightarrow y = \sqrt{3}x - 4\sqrt{3} + 2$

۲- الف) $|AB| = \sqrt{(y_2-y_1)^2 + (x_2-x_1)^2} \rightarrow \sqrt{(7-3)^2 + (-1-2)^2} = \sqrt{25} = 5$ (۲)

ب) $d = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2+b^2}} \rightarrow \frac{|6+12-3|}{\sqrt{9+16}} = \frac{15}{5} = 3$

۳- الف) $(2x + 3y - 6) \times 2 \rightarrow \begin{cases} 4x + 6y = 12 \\ 4x + 6y = 8 \end{cases}$ $\quad ax + by = \frac{c + c'}{2} \rightarrow 4x + 6y = 10 \rightarrow 2x + 3y = 5$ (۲)

ب) $d = \frac{|c - c'|}{\sqrt{a^2+b^2}} \rightarrow \frac{|12-8|}{\sqrt{16+36}} = \frac{4}{\sqrt{52}}$

۴- $\frac{|ax+by-c|}{\sqrt{a^2+b^2}} = \frac{|a'x+b'y-c'|}{\sqrt{(a')^2+(b')^2}} \rightarrow \frac{|3x-2y-1|}{\sqrt{9+4}} = \frac{|2x+3y-3|}{\sqrt{4+9}} \rightarrow |3x-2y-1| = |2x+3y-3|$

$3x - 2y - 1 = 2x + 3y - 3 \rightarrow \boxed{x - 5y = -2}$ (۲)

$3x - 2y - 1 = -2x - 3y + 3 \rightarrow \boxed{5x + y = 4}$

۵- $y + 3x = 2 \rightarrow m = -3$ $\quad y - 2x = 5 \rightarrow m' = 2$ $\quad \tan\theta = \left|\frac{m - m'}{1 + mm'}\right|$

$\rightarrow \tan\theta = \left|\frac{-3-2}{1+(-6)}\right| \rightarrow \tan\theta = 1 \rightarrow \theta = \frac{\pi}{4}$ (۲)

۶- الف) $|AB| = \sqrt{(y_2-y_1)^2 + (x_2-x_1)^2} \rightarrow \sqrt{36 + 64} = \sqrt{100} = 10$

ب) $M \left| \begin{array}{l} \frac{x_1+x_2}{2} \\ \frac{y_1+y_2}{2} \end{array} \right. \rightarrow x_M = \frac{3-5}{2} = -1$ $\quad y_M = \frac{4-2}{2} = 1$ $\quad M(-1, 1)$ (۲)

s.a.m

۷- الف) $x_M = \frac{x_1+x_2+x_3}{3} \rightarrow \frac{3-2-10}{3} = -3$ $\quad y_M = \frac{y_1+y_2+y_3}{3} \rightarrow \frac{1+3-13}{3} = -3$

$M(-3,-3)$

ب) $\frac{1}{2}\begin{vmatrix} 3 & 1 & 1 \\ -2 & 3 & 1 \\ -10 & -13 & 1 \end{vmatrix} = \frac{1}{2}(9-10+26+30+39+2) = \frac{1}{2}\times 96 = 48$ (۲)

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

ب) $x \rightarrow -x \quad y = \frac{-2x+1}{-4x-3}$ (۲)

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

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

۹- الف) $x' = x-a \rightarrow x = x'+a \rightarrow x = x'+2$

$y' = y-b \rightarrow y = y'+b \rightarrow y = y'-3$

$\Rightarrow (y'-3) = \frac{2(x'+2)+1}{(x'+2)-2} \rightarrow y' = \frac{2x'+5}{x'-1}$ (۱)

ب) $x' = x+2 \rightarrow x = x'-2$

$y' = y+2 \rightarrow y = y'-2$ $\Rightarrow (y'-2) = \frac{2(x'-2)+1}{(x'-2)-2} \rightarrow y' = \frac{4x'-17}{x'-4}$

$y'+2 = \frac{2x'+7}{x'}$

$y' = \frac{7}{x'}$

۱۰- الف) $\begin{cases} 3x+4y=2 \\ x-5y=1 \end{cases} \times(-3) \rightarrow \begin{cases} 3x+4y=2 \\ -3x+15y=-3 \end{cases}$

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

ب) $x = -\frac{\begin{vmatrix} b & c \\ b' & c' \end{vmatrix}}{\begin{vmatrix} a & b \\ a' & b' \end{vmatrix}} \rightarrow -\frac{\begin{vmatrix} 4 & 2 \\ -5 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 4 \\ 1 & -5 \end{vmatrix}} = -\frac{14}{-19} = \frac{14}{19}$ (۲)

$y = \frac{\begin{vmatrix} a & c \\ a' & c' \end{vmatrix}}{\begin{vmatrix} a & b \\ a' & b' \end{vmatrix}} \rightarrow \frac{\begin{vmatrix} 3 & 2 \\ 1 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 4 \\ 1 & -5 \end{vmatrix}} = \frac{1}{-19}$