مرزانک آقایی — تکلیف شماره ی ۱۵ — یازدهم دختر C

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۱. الف)

$(۴,۲)\quad(۵,-۲)$

$ax+b=y \to ۴a+b=۲$

$۵a+b=-۲$

$\Big\}\ a=-۴,\quad b=۱۸ \qquad -۴x+۱۸=y$

ب)

$۲y+۶x=-۱ \to ۲y+۶x=c' \xrightarrow{(۴,۲)} ۴+۲۴=c' \to c'=۲۸$

$۲y+۶x=۲۸ \to y+۳x=۱۴ \to y=۱۴-۳x$

ج)

$x+۳y=۱ \to \frac{-x+۱}{۳}=y \xrightarrow{m=-\frac{۱}{۳}} m'=۳ \to ۳x+b=y \xrightarrow{(۴,۲)} ۱۲+b=۲ \to b=-۱۰$

$۳x-۱۰=y$

د)

$\tan\frac{\pi}{۳}=\sqrt{۳} \to \sqrt{۳}x+b=y \xrightarrow{(۴,۲)} ۴\sqrt{۳}+b=۲ \to b=۲-۴\sqrt{۳} \to$

$\sqrt{۳}x+۲-۴\sqrt{۳}=y$

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۲. الف)

$\sqrt{\underbrace{(۲+۱)^۲}_{۹}+\underbrace{(۳-۷)^۲}_{۱۶}}=\sqrt{۲۵}=۵$

ب)

$۳x+۴y=۳,\quad (۲,۳) \to \frac{|۲\times۳+۳\times۴-۳|}{\sqrt{۹+۱۶}}=\frac{۱۵}{۵}=۳$

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۳. الف)

$۴x+۶y=۸$

$۲x+۳y=۶ \to ۴x+۶y=۱۲$

$۴x+۶y=\frac{c+c'}{۲} \to$

$۴x+۶y=\frac{۸+۱۲}{۲} \to \boxed{۴x+۶y=۱۰}$

ب)

$\frac{|۱۲-۸|}{\sqrt{۱۶+۳۶}}=\frac{۴}{\sqrt{۵۲}} \to \frac{۸\sqrt{۱۳}}{۵۲}=\frac{۲\sqrt{۱۳}}{۱۳}$

$۵۲=۲\times۲\times۱۳$

.4

$3x-2y=1$

$2x+3y=3$

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

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

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

.5

$$\tan\alpha = \left|\frac{m-m'}{1+mm'}\right| \rightarrow \left|\frac{2-(-3)}{1-6}\right| = \left|\frac{5}{-5}\right| = +1 \rightarrow \tan\alpha = \pm 1$$

$\alpha = 45$

$y+3x=3$ ↓ $y=3-3x$

$y-2x=5 \rightarrow y=5+2x$

.6 الف)

$$\sqrt{\underbrace{(3-5)^2}_{64} + \underbrace{(-2-4)^2}_{36}} = \sqrt{100} = 10$$

ب) $\begin{vmatrix} -1 & -1 \\ 1 & 1 \end{vmatrix}$

$\frac{3-5}{2} = -1 \qquad \frac{4-2}{2} = 1$

.7 الف) $\begin{vmatrix} -3 & -3 \\ -3 & -3 \end{vmatrix}$

$\frac{3-2-10}{3} = -3 \qquad \frac{1+3-13}{3} = -3$

ب)

$$\frac{1}{2} \times \begin{vmatrix} 3 & -2 & -10 \\ 1 & 3 & -13 \\ 1 & -1 & 1 \end{vmatrix} = \frac{1}{2} \times 96 = 48$$

$9 - 10 + 39 - (\underbrace{-30 - 2 - 39}_{-71}) = 96$

$\underbrace{-1}_{+5}$

8.

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

ب) $x \to -x \to y = \frac{-2x+1}{-4x-3}$

ج)

$\begin{matrix} y \to x \\ x \to y \end{matrix} \to x = \frac{2y+1}{4y-3} \to 4xy-3x = 2y+1 \to 4xy-2y = 3x+1 \to$

$y(4x-2) = 3x+1 \to y = \frac{3x+1}{4x-2}$

د)

$\begin{matrix} y \to -x \\ x \to -y \end{matrix} \to -x = \frac{-2y+1}{-4y-3} \to x = \frac{+1-2y}{4y+3} \to 4xy+3x = +1-2y \to$

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

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9. الف)

$x' = x-2 \to x = x'+2$

$y' = y+3 \to y = y'-3$

$y'-3 = \frac{2(x'+2)+1}{(x'+2)-3} \to y'-3 = \frac{2x'+4+1}{x'-1} \to$

$y' = \frac{2x'+5}{x'-1} + 3 \to y' = \frac{2x'+5+3x'-3}{x'-1} \to \boxed{y' = \frac{5x'+2}{x'-1}}$

ب)

$x = x'+3$

$x' = x-3$

$y' = y-2 \to y'+2 = \frac{3(x'+3)+1}{(x'+3)-3} \to y'+2 = \frac{3x'+10}{x'} \to$

$y = y'+2$

$y'+2 = \frac{3x'+1}{x'} \to y' = \frac{3x'+1-2x'}{x'} \to \boxed{y' = \frac{x'+1}{x'}}$

10. الف)

$$3x+4y=2$$

$$x-5y=1 \rightarrow 3x-15y=3 \xrightarrow{(-)} 19y=-1 \rightarrow y=-\frac{1}{19}$$

$$3x-\frac{4}{19}=2 \rightarrow 3x=+\frac{42}{19} \rightarrow x=+\frac{14}{19}$$

ب)

$$x=-\frac{4+10}{-15-4}=+\frac{14}{19} \qquad y=\frac{3-2}{-15-4}=-\frac{1}{19}$$