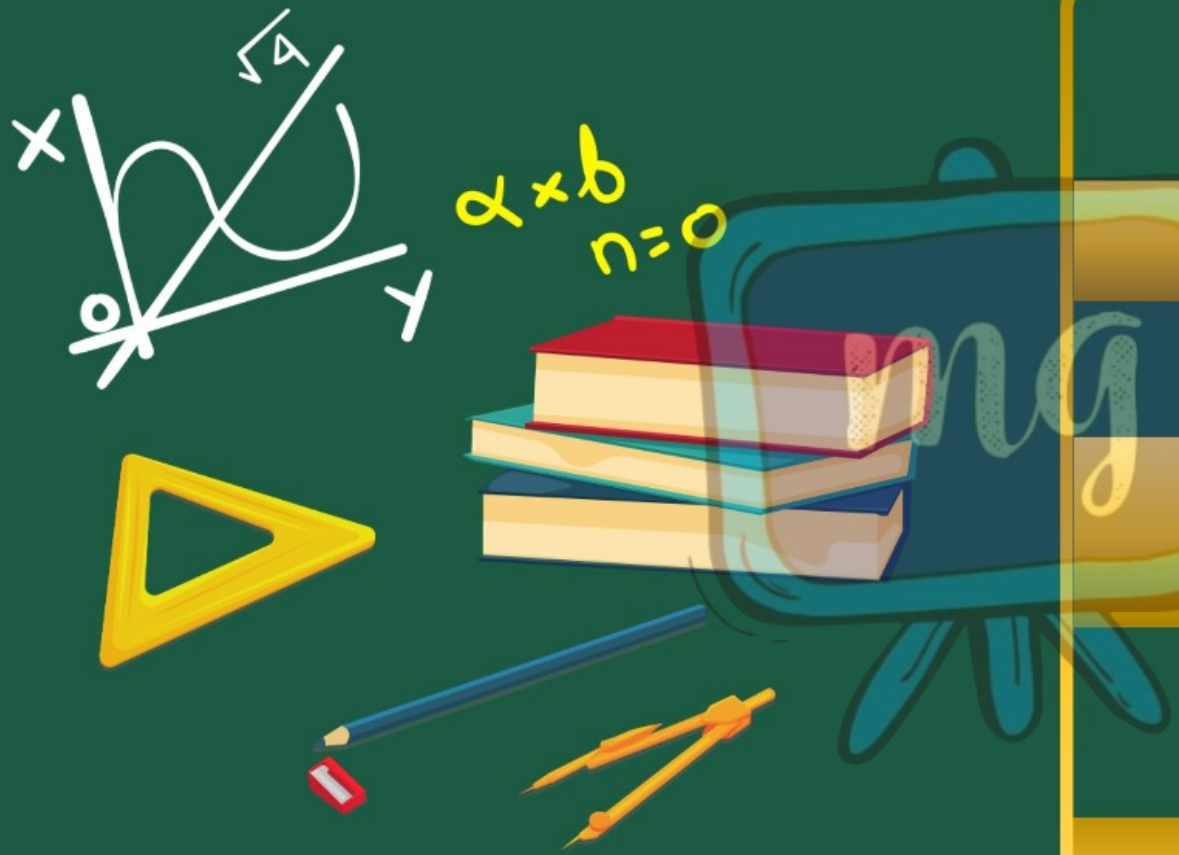
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Samagra Shiksha
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দশম শ্ৰেণীৰ বাবে

গণিত

অধ্যায় - ৩

দুটা চলকত ৰৈখিক সমীকৰণৰ যোৰ

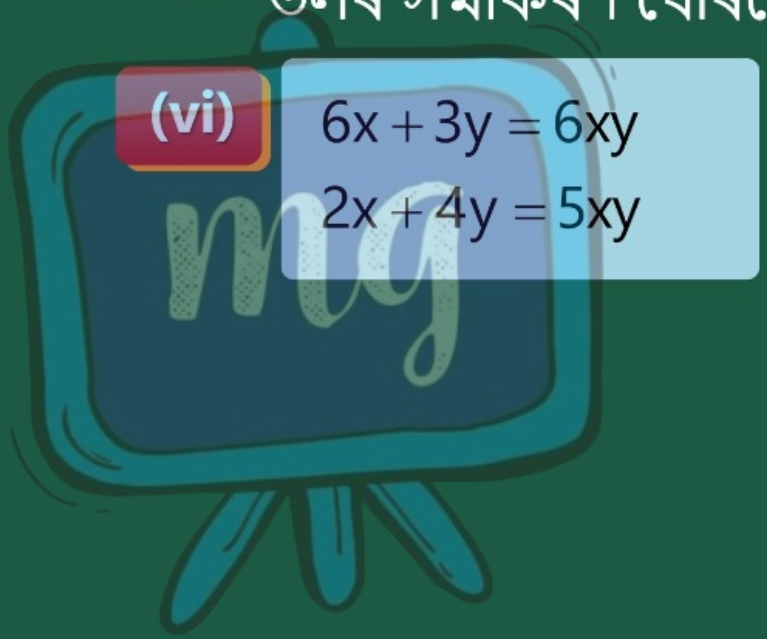
অংশ – ২৪

গায়ত্রী শইকীয়া

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1. ৰৈখিক সমীকৰণৰ যোৰলৈ পৰিৱৰ্তন কৰি তলৰ সমীকৰণ যোৰকেইটা সমাধা কৰা:



(vi)

$$6x + 3y = 6xy$$

$$2x + 4y = 5xy$$

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সমাধান :

$$6x + 3y = 6xy$$

$$\Rightarrow \frac{6x+3y}{xy} = 6$$

$$\Rightarrow \frac{6x}{xy} + \frac{3y}{xy} = 6$$

$$\Rightarrow \frac{6}{y} + \frac{3}{x} = 6$$

$$\Rightarrow \frac{3}{x} + \frac{6}{y} = 6$$

$$\Rightarrow \frac{1}{x} + \frac{2}{y} = 2 \quad \text{---(1)}$$

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$$2x+4y=5xy$$

$$\Rightarrow \frac{2x+4y}{xy}=5$$

$$\Rightarrow \frac{2x}{xy}+\frac{4y}{xy}=5$$

$$\Rightarrow \frac{2}{y}+\frac{4}{x}=5$$

$$\Rightarrow \frac{4}{x}+\frac{2}{y}=5 \quad \text{—— (2)}$$

ধরি, $\frac{1}{x}=p$, $\frac{1}{y}=q$

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① $\Rightarrow p + 2q - 2 = 0$ ——— ③

② $\Rightarrow 4p + 2q - 5 = 0$ ——— ④

③ − ④ $\Rightarrow$

$p + 2q - 2 - (4p + 2q - 5) = 0$

$\Rightarrow p + 2q - 2 - 4p - 2q + 5 = 0$

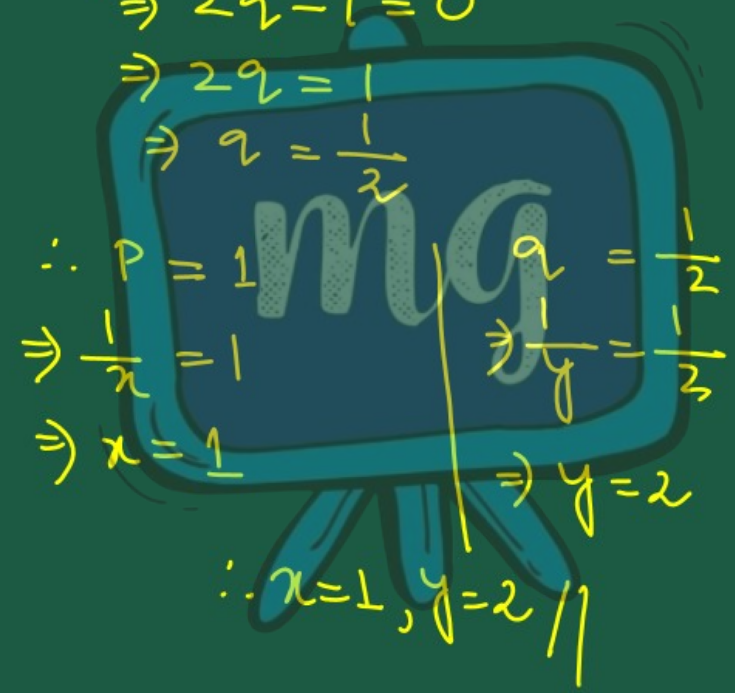
$\Rightarrow -3p + 3 = 0$

$\Rightarrow -3p = -3$

$\Rightarrow p = 1$

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(5) $\Rightarrow p + 2q - 2 = 0$

$\Rightarrow 1 + 2q - 2 = 0$

$\Rightarrow 2q - 1 = 0$

$\Rightarrow 2q = 1$

$\Rightarrow q = \frac{1}{2}$

$\therefore p = 1$ $\quad q = \frac{1}{2}$

$\Rightarrow \frac{1}{x} = 1$ $\quad \Rightarrow \frac{1}{y} = \frac{1}{2}$

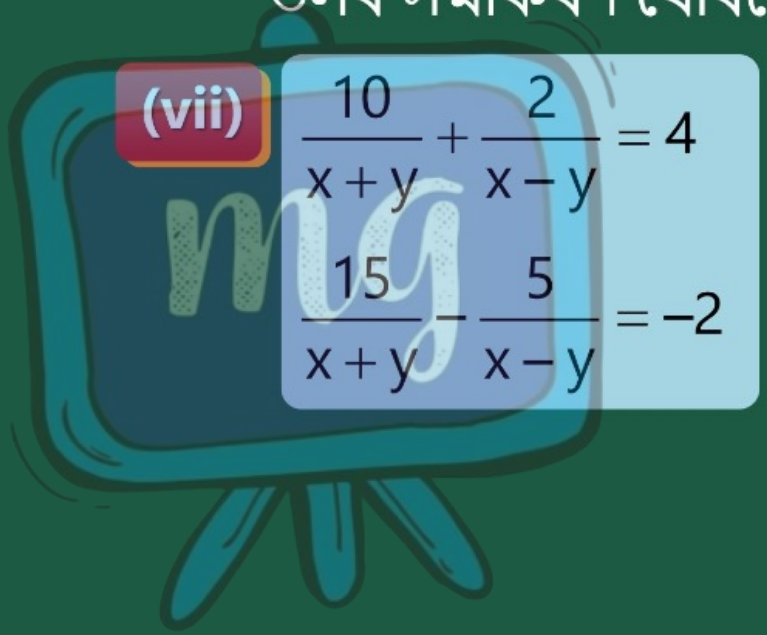
$\Rightarrow x = 1$ $\quad \Rightarrow y = 2$

$\therefore x = 1, y = 2$ //

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(vii)

$$\frac{10}{x+y}+\frac{2}{x-y}=4$$

$$\frac{15}{x+y}-\frac{5}{x-y}=-2$$

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সমাধান :

$$\frac{10}{x+y} + \frac{2}{x-y} = 4$$

$$\Rightarrow \frac{5}{x+y} + \frac{1}{x-y} = 2 \quad \text{— (1)}$$

এবং $\frac{15}{x+y} - \frac{5}{x-y} = -2$ — (2)

ধরি, $\frac{1}{x+y} = u$, $\frac{1}{x-y} = v$

(1) $\Rightarrow 5u + v - 2 = 0$ — (3)

(2) $\Rightarrow 15u - 5v + 2 = 0$ — (4)

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$(3) \times 5 \Rightarrow 5(5u + v - 2) = 5 \times 0$

$\Rightarrow 25u + 5v - 10 = 0$ ——— (5)

(4) + (5) $\Rightarrow$

$15u - 5v + 2 + 25u + 5v - 10 = 0$

$\Rightarrow 40u - 8 = 0$

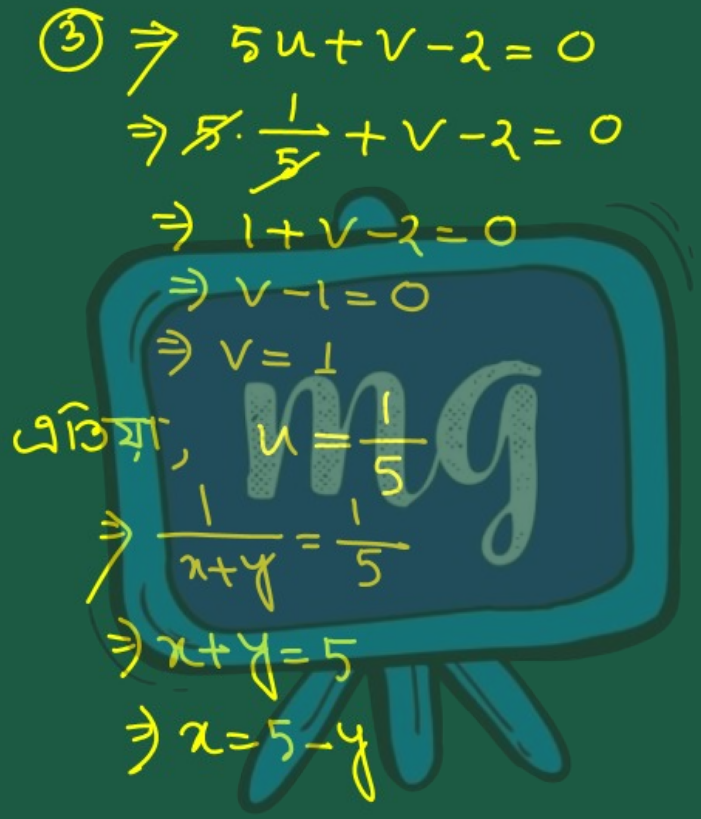
$\Rightarrow 40u = 8$

$\Rightarrow u = \frac{8}{40}$

$\Rightarrow u = \frac{1}{5}$

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③ $\Rightarrow 5u + v - 2 = 0$

$\Rightarrow 5 \cdot \frac{1}{5} + v - 2 = 0$

$\Rightarrow 1 + v - 2 = 0$

$\Rightarrow v - 1 = 0$

$\Rightarrow v = 1$

এবং, $u = \frac{1}{5}$

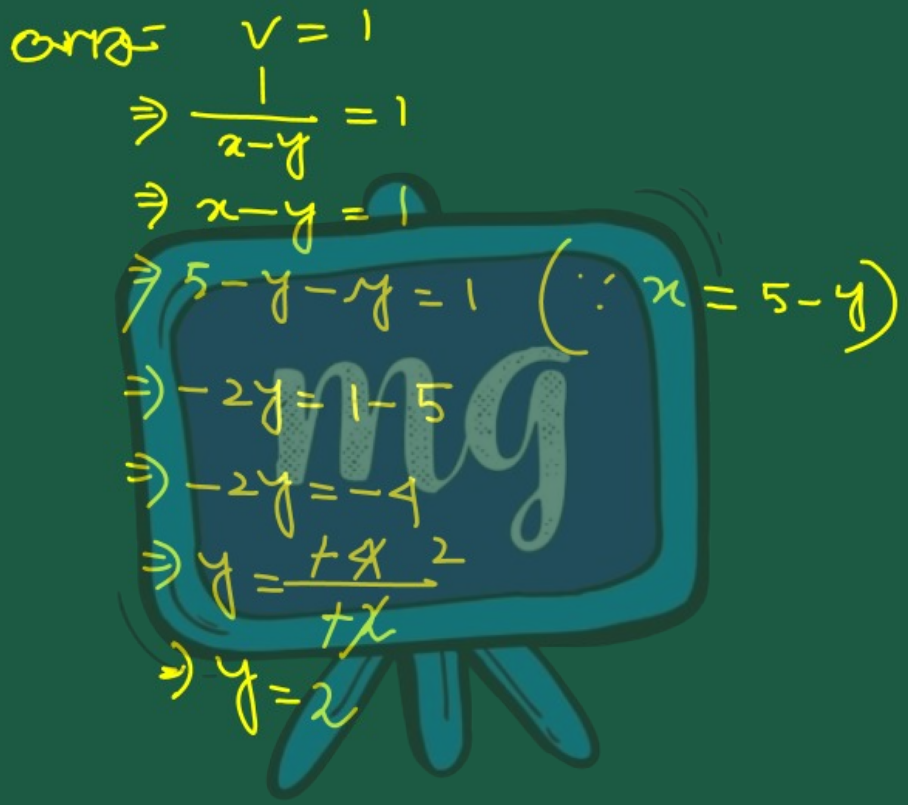
$\Rightarrow \frac{1}{x+y} = \frac{1}{5}$

$\Rightarrow x + y = 5$

$\Rightarrow x = 5 - y$

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$\therefore x = 5 - y$

$= 5 - 2$

$= 3$

$\therefore x = 3, y = 2$



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(viii)

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

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

$x=1, y=1$

$$\frac{1}{3.1+1}+\frac{1}{3.1-1}$$

$$=\frac{1}{4}+\frac{1}{2}$$

$$=\frac{1+2}{4}=\frac{3}{4}$$

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সমাধান :

$$\frac{1}{3x+y} + \frac{1}{3x-y} = \frac{3}{4} \quad \text{— (1)}$$

আর

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

$$\Rightarrow \frac{1}{3x+y} - \frac{1}{3x-y} = -\frac{1}{4} \quad \text{— (2)}$$

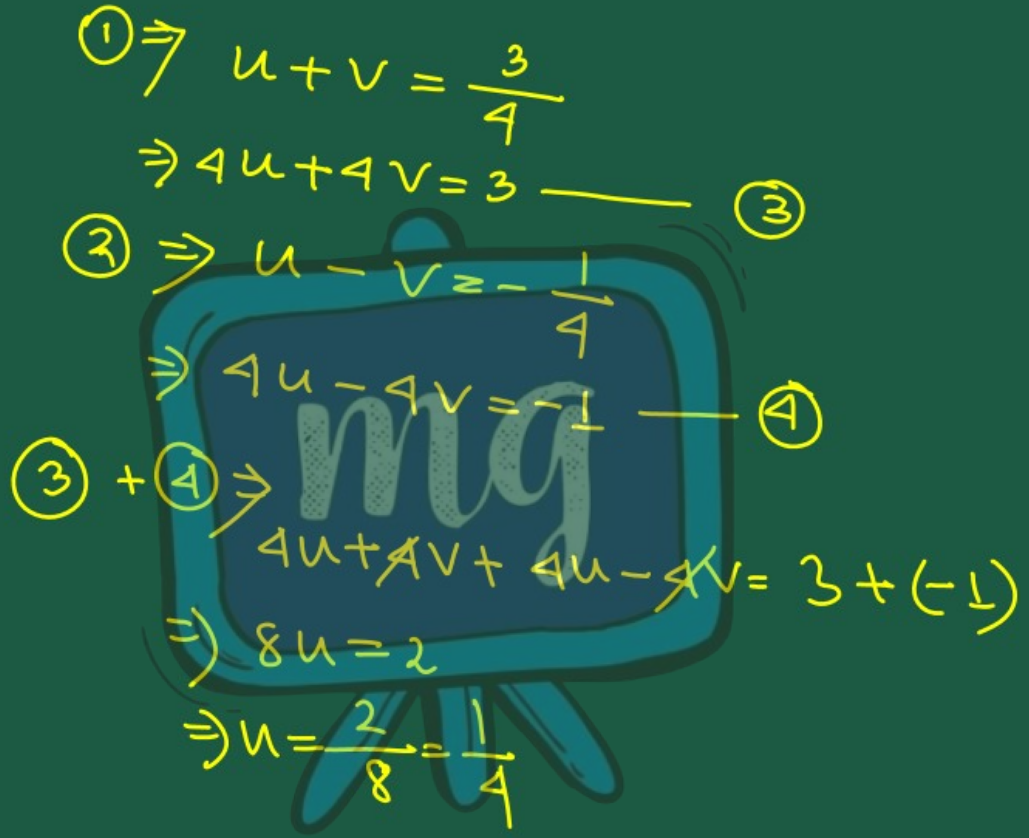
ধরি,

$$\frac{1}{3x+y} = u, \quad \frac{1}{3x-y} = v$$

mg

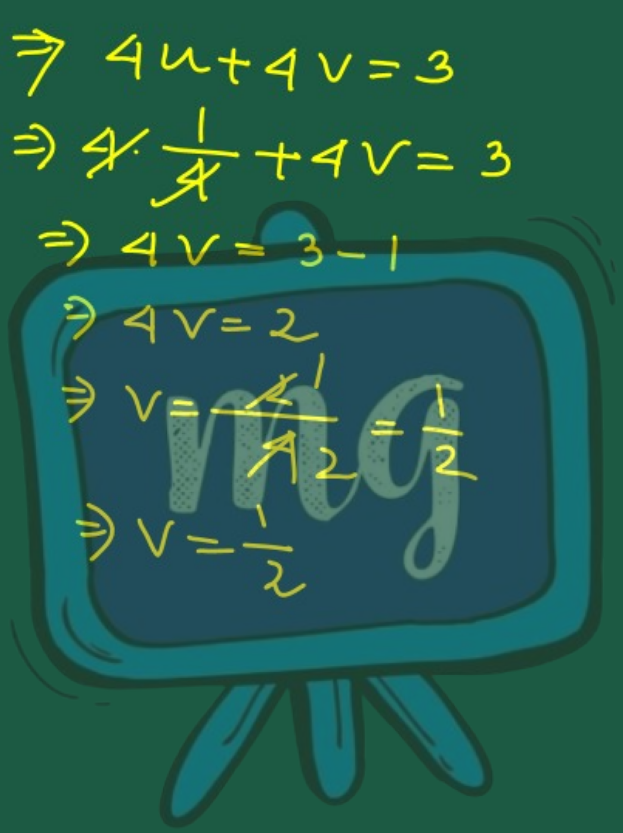
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$\therefore u = \frac{1}{4}$

$\Rightarrow \frac{1}{3x+y} = \frac{1}{4}$

$\Rightarrow 3x + y = 4$ ——— (5)

$v = \frac{1}{2}$

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

$\Rightarrow 3x - y = 2$ ——— (6)

(5) + (6) $\Rightarrow 6x = 6$

$\Rightarrow x = 1$

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(5) $\Rightarrow$

$3x+y=4$

$\Rightarrow 3.1+y=4$

$\Rightarrow y=4-3$

$\Rightarrow y=1$

$x=1, y=1$

