Exercise 3.3   Page No: 3.44

Solve the following system of equations:

1. 11x + 15y + 23 = 0
**   7x – 2y – 20 = 0**
Solution:

The given pair of equations are:
11x +15y + 23 = 0 …………………………. (i)
7x - 2y – 20 = 0 …………………………….. (ii)

From (ii)
2y = 7x – 20
$\Rightarrow$ y = (7x −20)/2 ……………………………… (iii)

Now, substituting y in equation (i) we get,
$\Rightarrow$ 11x + 15((7x−20)/2) + 23 = 0
$\Rightarrow$ 11x + (105x − 300)/2 + 23 = 0
$\Rightarrow$ (22x + 105x – 300 + 46) = 0
$\Rightarrow$ 127x – 254 = 0
$\Rightarrow$ x = 2
Next, putting the value of x in the equation (iii) we get,
$\Rightarrow$ y = (7(2) − 20)/2
            $\therefore$ y= -3
Thus, the value of x and y is found to be 2 and -3 respectively.

2. 3x – 7y + 10 = 0
**   y – 2x – 3 = 0**
Solution:
The given pair of equations are:
3x - 7y + 10 = 0 …………………………. (i)
y - 2x - 3 = 0 …………………………….. (ii)

From (ii)
y - 2x – 3 = 0
y = 2x+3 ……………………………… (iii)

Now, substituting y in equation (i) we get,
$\Rightarrow$ 3x - 7(2x+3) + 10 = 0
$\Rightarrow$ 3x - 14x – 21 + 10 = 0
$\Rightarrow$ -11x = 11
$\Rightarrow$ x = -1
Next, putting the value of x in the equation (iii) we get,
$\Rightarrow$ y = 2(-1) + 3
            $\therefore$ y= 1
Thus, the value of x and y is found to be -1 and 1 respectively.

3. 0.4x + 0.3y = 1.7
  0.7x – 0.2y = 0.8
Solution:

The given pair of equations are:
0.4x + 0.3y = 1.7
0.7x - 0.2y = 0.8
Let's, multiply LHS and RHS by 10 to make the coefficients as an integer
4x + 3y = 17 ……………………….. (i)
7x - 2y = 8 ……………………………… (ii)

From (ii)
7x - 2y = 8
x = (8 + 2y)/7……………………………… (iii)

Now, substituting x in equation (i) we get,
⇒   4[(8 + 2y)/7] + 3y = 17
⇒   32 + 8y + 21y = (17 x 7)
⇒   29y = 87
⇒   y = 3

Next, putting the value of y in the equation (iii) we get,
⇒   x = (8 + 2(3))/ 7
⇒   x = 14/7
        ∴ x = 2
Thus, the value of x and y is found to be 2 and 3 respectively.

4. x/2 + y = 0.8
  7/(x+ y/2) = 10
Solution:

The given pair of equations are:
        x/2 + y = 0.8   ⇒ x + 2y = 1.6…… (a)
        7/(x + y/2) = 10   ⇒7 = 10(x + y/2)   ⇒7 = 10x + 5y
Let's, multiply LHS and RHS of equation (a) by 10 for easy calculation
So, we finally get
10x + 20y = 16 ……………………….. (i) And,
10x + 5y = 7 ……………………………… (ii)

Now, subtracting two equations we get,
⇒ (i) – (ii)
        15y = 9
⇒   y = 3/5
Next, putting the value of y in the equation (i) we get,
        x = [16 − 20(3/5)]/10
⇒   (16 – 12)/10 = 4/10

∴ x = 2/5
Thus, the value of x and y obtained are 2/5 and 3/5 respectively.

5. 7(y + 3) - 2(x + 2) = 14
4(y - 2) + 3(x - 3) = 2
Solution:

The given pair of equations are:
7(y+3) - 2(x+2) = 14…………………………. (i)
4(y-2) + 3(x-3) = 2…………………………….. (ii)

From (i), we get
7y + 21 - 2x – 4 = 14
7y = 14 + 4 – 21 + 2x
⇒ y = (2x – 3)/7

From (ii), we get
4y – 8 + 3x – 9 = 2
4y + 3x – 17 – 2 = 0
⇒ 4y + 3x – 19 = 0 …………….. (iii)

Now, substituting y in equation (iii)
4[(2x − 3)/7] + 3x - 19=0
8x – 12 + 21x – (19 x 17) = 0   [after taking LCM]
29x = 145
⇒ x = 5

Now, putting the value of x and in the equation (ii)
4(y-2) + 3(5-3) = 2
⇒ 4y -8 + 6 = 2
⇒ 4y = 4
∴ y = 1
Thus, the value of x and y obtained are 5 and 1 respectively.

6. x/7 + y/3 = 5
x/2 – y/9 = 6
Solution:

The given pair of equations are:
x/7 + y/3 = 5…………………………. (i)
x/2 – y/9 = 6……………………………..(ii)
From (i), we get
x/7 + y/3 = 5
⇒3x + 7y = (5x21)   [After taking LCM]
⇒ 3x =105 – 7y
⇒ x = (105 – 7y)/3……. (iv)

From (ii), we get
$\qquad$ x/2 – y/9 = 6
$\qquad$ ⇒ 9x - 2y = 108 ……………………… (iii) $\qquad$ [After taking LCM]

Now, substituting x in equation (iii) we get,
$\qquad$ 9[(105 − 7y)/3] - 2y = 108
⇒ $\qquad$ 945 - 63y - 6y = 324 $\qquad$ [After taking LCM]
⇒ $\qquad$ 945 – 324 = 69y
⇒ $\qquad$ 69y = 621
⇒ $\qquad$ y = 9
Now, putting the value of y in the equation (iv)
$\qquad$ x = (105 − 7(9))/3
⇒ $\qquad$ x = (105 − 63)/3 = 42/3
$\qquad$ ∴ x = 14
Thus, the value of x and y obtained are 14 and 9 respectively.

7. x/3 + y/4 = 11
$\quad$ **5x/6 − y/3 = −7**
Solution:

The given pair of equations are:
x/3 + y/4 = 11…………………………. (i)
5x/6 − y/3 = −7…………………………….. (ii)
From (i), we get
$\qquad$ x/3 + y/4 = 11
$\qquad$ ⇒4x + 3y = (11x12) $\qquad$ [After taking LCM]
$\qquad$ ⇒ 4x =132 – 3y
$\qquad$ ⇒ x = (132 – 3y)/4……. (iv)

From (ii), we get
$\qquad$ 5x/6 − y/3 = −7
$\qquad$ ⇒ 5x - 2y = -42 ……………………… (iii) $\qquad$ [After taking LCM]

Now, substituting x in equation (iii) we get,
$\qquad$ 5[(132 − 3y)/4] - 2y = -42
⇒ $\qquad$ 660 - 15y - 8y = -42 x 4 $\qquad$ [After taking LCM]
⇒ $\qquad$ 660 + 168 = 23y
⇒ $\qquad$ 23y = 828
⇒ $\qquad$ y = 36
Now, putting the value of y in the equation (iv)
$\qquad$ x = (132 – 3(36))/4
⇒ $\qquad$ x = (132 − 108)/4 = 24/4
$\qquad$ ∴ x = 6
Thus, the value of x and y obtained are 6 and 36 respectively.

8. 4/x + 3y = 8
   6/x −4y = −5
Solution:

Taking $1/x = u$
Then the two equation becomes,
$4u + 3y = 8$……………………… (i)
$6u - 4y = -5$……………………. (ii)
From (i), we get
$4u = 8 - 3y$
$\Rightarrow$ $u = (8 − 3y)/4$ …….. (iii)
Substituting u in (ii)
       $[6(8 − 3y)/4] - 4y = -5$
$\Rightarrow$ $[3(8−3y)/2] − 4y = −5$
$\Rightarrow$ $24 − 9y −8y = −5 \times 2$ [After taking LCM]
$\Rightarrow$ $24 - 17y = -10$
$\Rightarrow$ $-17y =- 34$
$\Rightarrow$ $y = 2$
Putting y=2 in (iii) we get,
       $u = (8 − 3(2))/4$
$\Rightarrow$ $u = (8 − 6)/4$
$\Rightarrow$ $u = 2/4 = 1/2$
$\Rightarrow$ $x = 1/u = 2$
       $\therefore x = 2$

So, the solution of the pair of equations given is x=2 and y =2.

9. x + y/2 = 4
   2y + x/3 = 5
Solution:

The given pair of equations are:
$x + y/2 = 4$ ……………………. (i)
$2y + x/3 = 5$……………………. (ii)
From (i) we get,
       $x + y/2 = 4$
$\Rightarrow$ $2x + y = 8$ [After taking LCM]
$\Rightarrow$ $y = 8 - 2x$ …..(iv)
From (ii) we get,
$x + 6y = 15$ ……………… (iii)   [After taking LCM]
Substituting y in (iii), we get
$x + 6(8 - 2x) = 15$
$\Rightarrow$ $x + 48 - 12x = 15$
$\Rightarrow$ $-11x = 15 - 48$
$\Rightarrow$ $-11x = -33$
$\Rightarrow$ $x = 3$

Putting x = 3 in (iv), we get
$\quad$ y = 8 - (2x3)
$\quad$ ∴ y = 8 - 6 = 2
Hence, the solution of the given system of equation are x = 3 and y = 2 respectively.

10. x + 2y = 3/2
$\quad$ **2x + y = 3/2**
Solution:

$\quad$ The given pair of equations are:
$\quad$ x + 2y = 3/2 …………………. (i)
$\quad$ 2x + y = 3/2…………………… (ii)
$\quad$ Let us eliminate y from the given equations. The coefficients of y in the given equations are 2
$\quad$ and 1 respectively. The L.C.M of 2 and 1 is 2. So, we make the coefficient of y equal to 2 in the
$\quad$ two equations.

$\quad$ Multiplying equation (i)x1 and (ii)x2 ⇒

$\quad$ x + 2y = 3/2 ………………………. (iii)
$\quad$ 4x + 2y = 3 ……………………………………………. (iv)

$\quad$ Subtracting equation (iii) from (iv)

$\qquad$ (4x - x) + (2y-2y) = 3x = 3 – (3/2)
$\qquad$ ⇒ 3x = 3/2
$\qquad$ ⇒ x = 1/2
$\quad$ Putting x = 1/2 in equation (iv)
$\qquad$ 4(1/2) + 2y = 3
$\qquad$ ⇒ 2 + 2y = 3
$\qquad$ ∴ y= 1/2
$\quad$ The solution of the system of equation is x = 1/2 and y = 1/2

11. √2x – √3y = 0
$\quad$ **√3x − √8y = 0**
Solution:

$\quad$ The given pair of equations are:
$\quad$ √2x – √3y = 0……………………….. (i)
$\quad$ √3x − √8y = 0……………………….. (ii)

$\quad$ From equation (i)
$\quad$ x = √(3/2)y ……………..(iii)

$\quad$ Substituting this value in equation (ii) we obtain
$\qquad$ √3x − √8y = 0
$\quad$ ⇒ $\qquad$ √3(√(3/2)y) − √8y = 0
$\quad$ ⇒ $\qquad$ (3/√2)y - √8y = 0
$\quad$ ⇒ $\qquad$ 3y - 4y = 0

$\Rightarrow \quad$ y = 0

Now, substituting y in equation (iii) we obtain

$\Rightarrow \quad$ x=0

Thus, the value of x and y obtained are 0 and 0 respectively.

12. 3x – (y + 7)/11 + 2 = 10
   2y + (x + 11)/7 = 10
Solution:

The given pair of equations are:
3x – (y + 7)/11 + 2 = 10……………….. (i)
2y + (x + 11)/7 = 10…………………….. (ii)

From equation (i)
$\quad$ 33x – y – 7 + 22 = (10 x 11)   [After taking LCM]
$\Rightarrow \quad$ 33x – y + 15 = 110
$\Rightarrow \quad$ 33x + 15 – 110 = y
$\Rightarrow \quad$ y = 33x – 95………. (iv)
From equation (ii)
$\quad$ 14 + x + 11 = (10 x 7)   [After taking LCM]
$\Rightarrow \quad$ 14y + x + 11 = 70
$\Rightarrow \quad$ 14y + x = 70 - 11
$\Rightarrow \quad$ 14y + x = 59 …………………….. (iii)
Substituting (iv) in (iii) we get,
$\quad$ 14 (33x – 95) + x = 59
$\Rightarrow \quad$ 462x – 1330 + x = 59
$\Rightarrow \quad$ 463x = 1389
$\Rightarrow \quad$ x = 3
Putting x = 3 in (iii) we get,
$\Rightarrow \quad$ y = 33(3) - 95
$\quad \therefore$ y= 4
The solution for the given pair of equations is x = 3 and y = 4 respectively.

13. 2x – (3/y) = 9
   3x + (7/y) = 2 ,y ≠ 0
Solution:

The given pair of equations are:
2x – (3/y) = 9……………………………. (i)
3x + (7/y) = 2…………………………… (ii)
Substituting 1/y = u the above equations becomes,
2x - 3u = 9 ………………………..(iii)
3x + 7u = 2………………………..(iv)

From (iii)
2x = 9 + 3u
⇒   x = (9+3u)/2
Substituting the value of x from above in the equation (iv) we get,
3[(9+3u)/2] + 7u = 2
⇒   27 + 9u + 14u = (2 x 2)
⇒   27 + 23u = 4
⇒   23u = -23
⇒   u = -1
So,   y = 1/u = -1

And putting u = -1 in x = (9 + 3u)/2 we get,
⇒   x = [9 + 3(−1)]/2 = 6/2
         ∴ x = 3
The solution of the pair of equations given are y = 3 and x = -1 respectively.

14. 0.5x + 0.7y = 0.74
   0.3x + 0.5y = 0.5
Solution:

The given pair of equations are:
0.5x + 0.7y = 0.74……………………… (i)
0.3x - 0.5y = 0.5 ………………………….. (ii)
Now, let's multiply LHS and RHS by 100 for both (i) and (ii) for making integral coefficients
and constants.
(i) x100 ⇒
50x +70y = 74 ……………………….. (iii)
(ii) x100 ⇒
30x + 50y = 50 ……………………………… (iv)

From (iii)
50x = 74 - 70y
x = (74−70y)/ 50 ……………………………… (v)

Now, substituting x in equation (iv) we get,
         30[(74−70y)/ 50] + 50y = 50
⇒   222 - 210y + 250y = 250   [After taking LCM]
⇒   40y = 28
⇒   y = 0.7
Now, by putting the value of y in the equation (v), we get
⇒   x = [74 − 70(0.7)]/ 50=0
⇒   x =25/ 50 = 1/2
         ∴ x = 0.5
Thus, the value of x and y so obtained are 0.5 and 0.7 respectively.

15. $1/(7x) + 1/(6y) = 3$

$1/(2x) – 1/(3y) = 5$

Solution:

The given pair of equations are:

$1/(7x) + 1/(6y) = 3$……………………….. (i)

$1/(2x) – 1/(3y) = 5$……………………………. (ii)

Multiplying (ii) by 1/2 we get,

$1/(4x) – 1/(6y) = 52$……………………………. (iii)

Now, solving equations (i) and (iii)

$1/(7x) + 1/(6y) = 3$……………………….. (i)

$1/(4x) – 1/(6y) = 5/2$……………………………. (iii)

Adding (i) + (iii) we get,

$1/x(1/7 + 1/4) = 3 + 5/2$

⇒ $1/x(11/28) = 11/2$

⇒ $x = 1/14$

Using $x =1/ 14$ we get, in (i)

$1/[7(1/14)] + 1/(6y) = 3$

⇒ $2 + 1/(6y)=3$

⇒ $1/(6y) = 1$

⇒ $y = 1/6$

The solution for the given pair of equations is $x=1/14$ and $y=1/6$ respectively.

16. $1/(2x) + 1/(3y) = 2$

$1/(3x) + 1/(2y) = 13/6$

Solution:

Let $1/x = u$ and $1/y = v$,

So the given equations becomes,

$u/2 + v/3 = 2$ ………………(i)

$u/3 + v/2 = 13/6$ …………...(ii)

From (i), we get

$u/2 + v/3 = 2$

⇒ $3u + 2v = 12$

⇒ $u = (12 - 2v)/3$ ………….(iii)

Using (iii) in (ii)

$[(12 - 2v)/3]/3 + v/2 = 13/6$

⇒ $(12 - 2v)/9 + v/2 = 13/6$

⇒ $24 – 4v + 9v = (13/6) x 18$ [after taking LCM]

⇒ $24 + 5v = 39$

⇒ $5v = 15$

⇒   v = 3

Substituting v in (iii)

        u = (12 − 2(3))/3
⇒   u = 2

Thus, x = 1/u   ⇒ x = 1/2 and

        y = 1/v   ⇒ y = 1/3

The solution for the given pair of equations is x = 1/2 and y = 1/3 respectively.

17. 15/u + 2/v = 17

1/u + 1/v = 36/5

Solution:

Let 1/x = u and 1/y = v

So, the given equations becomes

15x + 2y = 17 ………………………….. (i)

x + y = 36/5………………………. (ii)

From equation (i) we get,

2y = 17 - 15x

=y = (17 − 15x)/ 2 …………………. (iii)

Substituting (iii) in equation (ii) we get,

= x + (17 − 15x)/ 2 = 36/5

2x + 17 - 15x = (36 x 2)/ 5   [after taking LCM]

-13x = 72/5 - 17

= -13x = -13/5

⇒   x = 1/5

⇒   u = 1/x = 5

Putting x = 1/5in equation (ii) , we get

        1/5 + y = 36/5

⇒   y = 7

⇒   v = 1/y = 1/7

The solution of the pair of equations given are u = 5 and v = 1/7 respectively.

18. 3/x – 1/y = −9

2/x + 3/y = 5

Solution:

Let 1/x = u and 1/y = v

So, the given equations becomes

3u – v = -9…………………..(i)

2u + 3v = 5 ……………………….(ii)

Multiplying equation (i) x 3 and (ii) x 1 we get,

9u - 3v = -27 ………………………….. (iii)

2u + 3v = 5 ……………………………… (iv)

Adding equation (iii) and (iv) we get ,

9u + 2u - 3v + 3v = -27 + 5

⇒ 11u = -22

⇒ u = -2

Now putting u =-2 in equation (iv) we get,

2(-2) + 3v = 5

⇒ 3v = 9

⇒ v = 3

Hence, x = 1/u = −1/2 and,

y = 1/v = 1/3

19. 2/x + 5/y = 1

60/x + 40/y = 19

Solution:

Let 1/x = u and 1/y = v

So, the given equations becomes

2u + 5v = 1…………………..(i)

60u + 40v = 19 ……………………….(ii)

Multiplying equation (i) x 8 and (ii) x 1 we get,

16u + 40v = 8 ………………………….. (iii)

60u + 40v = 19 ……………………………… (iv)

Subtracting equation (iii) from (iv) we get,

60u - 16u + 40v - 40v = 19 - 8

⇒ 44u = 11

⇒ u = 1/4

Now putting u = 1/4 in equation (iv) we get,

60(1/4) + 40v = 19

⇒ 15 + 40v = 19

⇒ v = 4/ 40 = 1/10

Hence, x = 1/u = 4 and,

y = 1/v = 10

20. 1/(5x) + 1/(6y) = 12

1/(3x) – 3/(7y) = 8

Solution:

Let $1/x = u$ and $1/y = v$
So, the given equations becomes
$u/5 + v/6 = 12$……………………..(i)
$u/3 - 3v/7 = 8$………………………(ii)

Taking LCM for both equations, we get
$6u + 5v = 360$………. (iii)
$7u - 9v = 168$……….. (iv)

Subtracting (iii) from (iv)
$\qquad 7u - 9v - (6u + 5v) = 168 - 360$
$\Rightarrow \qquad u - 14v = -192$
$\Rightarrow \qquad u = (14v - 192)$………. (v)

Using (v) in equation (iii), we get
$\qquad 6(14v - 192) + 5v = 360$
$\Rightarrow \qquad 84v - 1152 + 5v = 360$
$\Rightarrow \qquad 89v = 1512$
$\Rightarrow \qquad v = 1512/89$
$\Rightarrow \qquad y = 1/v = 89/1512$

Now, substituting v in equation (v), we find u
$\qquad u = 14 \times (1512/89) - 192$
$\Rightarrow \qquad u = 4080/89$
$\Rightarrow \qquad x = 1/u = 89/4080$

Hence, the solution for the given system of equations is $x = 89/4080$ and $y = 89/1512$

21. 4/x + 3y = 14
3/x – 4y = 23
Solution:

Taking $1/x = u$, the given equation becomes
$4u + 3y = 14$…………………….. (i)
$3u - 4y = 23$…………………….. (ii)

Adding (i) and (ii), we get
$\qquad 4u + 3y + 3u - 4y = 14 + 23$
$\Rightarrow \qquad 7u - y = 37$
$\Rightarrow \qquad y = 7u - 37$……………………… (iii)
Using (iii) in (i),
$\qquad 4u + 3(7u - 37) = 14$
$\Rightarrow \qquad 4u + 21u - 111 = 14$
$\Rightarrow \qquad 25u = 125$
$\Rightarrow \qquad u = 5$

⇒ $x = 1/u = 1/5$

Putting $u = 5$ in (iii), we find y

     $y = 7(5) - 37$

⇒ $y = -2$

Hence, the solution for the given system of equations is $x = 1/5$ and $y = -2$

22. $4/x + 5y = 7$
     $3/x + 4y = 5$

Solution:

Taking $1/x = u$, the given equation becomes

$4u + 5y = 7$………………….. (i)

$3u + 4y = 5$……………………. (ii)

Subtracting (ii) from (i), we get

     $4u + 5y - (3u + 4y) = 7 - 5$

⇒ $u + y = 2$

⇒ $u = 2 - y$……………………… (iii)

Using (iii) in (i),

     $4(2 - y) + 5y = 7$

⇒ $8 - 4y + 5y = 7$

⇒ $y = -1$

Putting $y = -1$ in (iii), we find u

     $u = 2 - (-1)$

⇒ $u = 3$

⇒ $x = 1/u = 1/3$

Hence, the solution for the given system of equations is $x = 1/3$ and $y = -1$

23. $2/x + 3/y = 13$
     $5/x - 4/y = -2$

Solution:

Let $1/x = u$ and $1/y = v$

So, the given equations becomes

$2u + 3v = 13$………………….. (i)

$5u - 4v = -2$ ………………………. (ii)

Adding equation (i) and (ii) we get,

     $2u + 3v + 5u - 4v = 13 - 2$

⇒ $7u - v = 11$

⇒ $v = 7u - 11$…….. (iii)

Using (iii) in (i), we get

$\qquad$ 2u + 3(7u – 11) = 13

$\Rightarrow$ $\qquad$ 2u + 21u – 33 = 13

$\Rightarrow$ $\qquad$ 23u = 46

$\Rightarrow$ $\qquad$ u = 2

Substituting u = 2 in (iii), we find v

$\qquad$ v = 7(2) – 11

$\Rightarrow$ $\qquad$ v = 3

Hence, x = 1/u = 1/2 and,

$\qquad$ y = 1/v = 1/3

24. 2/x + 3/y = 2

$\quad$ **4/x - 9/y = -1**

Solution:

$\qquad$ Let 1/√x = u and 1/√y = v,

$\qquad$ So, the given equations becomes

$\qquad$ 2u + 3v = 2………………….. (i)

$\qquad$ 4u - 9v = -1 ………………………. (ii)

$\qquad$ Multiplying (ii) by 3 and

$\qquad$ Adding equation (i) and (ii)x3 we get,

$\qquad$ 6u + 9v + 4u - 9v = 6 - 1

$\Rightarrow$ $\qquad$ 10u = 5

$\Rightarrow$ $\qquad$ u = 1/2

$\qquad$ Substituting u = 1/2 in (i), we find v

$\qquad$ 2(1/2) + 3v = 2

$\Rightarrow$ $\qquad$ 3v = 2 – 1

$\Rightarrow$ $\qquad$ v = 1/3

$\qquad$ Since, 1/√x = u we get x = 1/u²

$\Rightarrow$ $\qquad$ x = 1/(1/2)² = 4

$\qquad$ And,

$\qquad$ 1/√y = v $\quad$ y = 1/v²

$\Rightarrow$ $\qquad$ y = 1/(1/3)² = 9

$\qquad$ Hence, the solution is x = 4 and y = 9.

25. (x + y)/xy = 2

$\quad$ **(x - y)/xy = 6**

Solution:

$\qquad$ The given pair of equations are:

$\qquad$ (x + y)/xy = 2 $\Rightarrow$ 1/y + 1/x = 2……. (i)

(x - y)/xy = 6 ⇒ 1/y - 1/x = 6………(ii)

Let 1/x = u and 1/y = v, so the equation (i) and (ii) becomes
v + u = 2……. (iii)
v – u = 6……..(iv)

Adding (iii) and (iv), we get
      2v = 8
⇒   v = 4
⇒   y = 1/v = 1/4

Substituting v = 4 in (iii) to find x,
      4 + u = 2
⇒   u = -2
⇒   x = 1/u = -1/2

Hence, the solution is x = -1/2 and y = 1/4.

26. 2/x + 3/y = 9/xy
**   4/x + 9/y = 21/xy**
Solution:

Taking LCM for both the given equations, we have
(2y + 3x)/ xy = 9/xy   ⇒   3x + 2y = 9………. (i)
(4y + 9x)/ xy = 21/xy   ⇒   9x + 4y = 21………(ii)

Performing (ii) – (i)x2⇒
      9x + 4y – 2(3x + 2y) = 21 – (9x2)
⇒   3x = 3
⇒   x = 1

Using x = 1 in (i), we find y
      3(1) + 2y = 9
⇒   y = 6/2
⇒   y = 3

Thus, the solution for the given set of equations is x = 1 and y = 3.