



MATHS

BOOKS - CHETANA MATHS (MARATHI ENGLISH)

Linear equations in two variables

Example

1. Solve the following simultaneous equations:

$$5x - 3y = 8, 3x + y = 2.$$



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2. Solve: $3x+2y=29, 5x-y=18$.

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3. Complete the following activity to solve the simultaneous equations. $5x + 3y = 9, 2x - 3y = 12$.

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4. Solve the following simultaneous equations.

$3a + 5b = 26, a + 5b = 22$.

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5. Solve the following simultaneous equations.

$$x + 7y = 10, 3x - 2y = 7.$$

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6. Solve the following simultaneous equations.

$$2x - 3y = 9, 2x + 9y = 13.$$

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7. Solve the following simultaneous equations.

$$5m - 3n = 19, m - 6n = -7.$$

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8. Solve the following simultaneous equations.

$$5x + 2y = -3, x + 5y = 4.$$

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9. Solve the following simultaneous equations.

$$\frac{1}{3}x + y = \frac{10}{3}, 2x + \frac{1}{4}y = \frac{11}{4}.$$

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10. Solve: $5x + 10y = 35, 10x + 5y = 40.$

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11. Solve the following simultaneous equations.

$$99x + 101y = 499, 101x + 99y = 501.$$



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12. Solve the following simultaneous equations.

$$49x - 57y = 172, 57x - 49y = 252.$$



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13. Solve the following simultaneous equations by using

graphical method. $x + y = 4, 2x - y = 2.$



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14. Solve the above equations by method of elimination. Check your solution with the solution obtained by graphical method. $x - y = 1$, $5x - 3y = 1$

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15. Complete the following table to draw the graph of $2x - 6y = 3$.



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16. Solve the following simultaneous equations graphically. $x + y = 6$, $x - y = 4$.



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17. Solve the following simultaneous equations graphically, $x + y = 5$, $x - y = 3$.



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18. Solve the following simultaneous equations graphically, $x + y = 0$, $2x - y = 9$.



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19. Solve the following simultaneous equations graphically, $3x - y = 2$, $2x - y = 3$.



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20. Solve the following simultaneous equations graphically, $3x - 4y = -7$, $5x - 2y = 0$.



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21. Solve the following simultaneous equations graphically, $2x - 3y = 4$, $3y - x = 4$.



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22. Solve the following simultaneous equations using graphical method. $2x + 3y = 12$, $x - y = 1$.



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23. Solve the following simultaneous equations using graphical method. $x - 3y = 1, 3x - 2y + 4 = 0.$



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24. Solve the following simultaneous equations using graphical method. $5x - 6y + 30 = 0, 5x + 4y - 20 = 0.$



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25. Solve the following simultaneous equations using graphical method. $3x - y - 2 = 0, 2x + y = 8.$



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26. Solve the following simultaneous equations using graphical method. $3x + y = 10, x - y = 2.$



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27. To solve simultaneous equation $x + 2y = 4, 3x + 6y = 12.$ graphically, following are the ordered pairs. Plotting the above pairs, graph is drawn. Observe it and find answers of the following questions: (i) Are the graphs of both the equations different or same?



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28. To solve simultaneous equation $x + 2y = 4$, $3x + 6y = 12$. graphically, following are the ordered pairs. Plotting the above pairs, graph is drawn. Observe it and find answers of the following questions: (ii) What are the solutions of the two equations $x + 2y = 4$ and $3x + 6y = 12$? How many solutions are possible?

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29. To solve simultaneous equation $x + 2y = 4$, $3x + 6y = 12$. graphically, following are the ordered pairs. Plotting the above pairs, graph is

drawn. Observe it and find answers of the following questions: (iii) What are the relations between coefficients of x , coefficients of y and constant terms in both the equations?



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30. To solve simultaneous equation $x + 2y = 4$, $3x + 6y = 12$ graphically, following are the ordered pairs. Plotting the above pairs, graph is drawn. Observe it and find answers of the following questions: (iv) What conclusion can you draw when two equations are given but the graph is only one line?



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31. Draw graphs of $x-2y=4, 2x-4y=12$ on the same coordinate plane. Observe it. Think of the solutions of the given equations.



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32. Solve the simultaneous equations using Cramer's rule.

$$y + 2x - 19 = 0, 2x - 3y + 3 = 0$$



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33. Complete the following activity. (i) What is the nature of solution if $D=0$?





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34. Complete the following activity.(ii)What can you say about lines if common solution is not possible?



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35. Observe the given determinant and fill in the blanks

with correct numbers $\begin{vmatrix} 3 & 2 \\ 4 & 5 \end{vmatrix} = (3 \times _) - (_ \times 4).$



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36. Find the value of the determinant $\begin{vmatrix} -1 & 7 \\ 2 & 4 \end{vmatrix}$



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37. Find the value of the determinant $\begin{vmatrix} 5 & 3 \\ -7 & 0 \end{vmatrix}$



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38. Find the value of the determinant $\begin{vmatrix} \frac{7}{3} & \frac{5}{3} \\ \frac{3}{2} & \frac{1}{2} \end{vmatrix}$



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39. Find the value of the determinant $\begin{vmatrix} 4 & 3 \\ 2 & 7 \end{vmatrix}$



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40. Find the value of the following determinant

$$\begin{vmatrix} 5 & -2 \\ -3 & 1 \end{vmatrix}$$



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41. Find the value of the following determinant $\begin{vmatrix} 3 & -1 \\ 1 & 4 \end{vmatrix}$



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42. Solve the following simultaneous equations using

Cramer's rule. $3x - 4y = 10$, $4x + 3y = 5$.



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43. Solve the following simultaneous equations using Cramer's rule.
 $4x + 3y - 4 = 0$, $6x = 8 - 5y$.



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44. Solve the following simultaneous equations using Cramer's rule.
 $x + 2y = -1$, $2x - 3y = 12$.



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45. Solve the following simultaneous equations using Cramer's rule.
 $6x - 3y = -10$, $3x + 5y - 8 = 0$



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46. Solve the following simultaneous equations using Cramer's rule.
 $4m - 2n = -4$, $4m + 3n = 16$.



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47. Solve the following simultaneous equations using Cramer's rule.
 $7x + 3y = 15$, $12y - 5x = 39$.



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48. Solve the following simultaneous equations using Cramer's rule.
 $6x - 4y = -12$, $8x - 3y = -2$.



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49. Solve the following simultaneous equations using

Cramer's rule $4m + 6n = 54$, $3m + 2n = 28$.



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50. Solve the following simultaneous equations using

Cramer's rule $2x + 3y = 2$, $x - \frac{y}{2} = \frac{1}{2}$.



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51. Solve the following simultaneous equations using

Cramer's rule $3x - 2y = \frac{5}{2}, \left(\frac{1}{3}\right)x + 3y = -\frac{4}{3}.$



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52. Solve the following simultaneous equations using

Cramer's rule $\frac{x + y - 8}{2} = \frac{x + y - 14}{3} = \frac{3x - y}{4}$



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53. Solve the simultaneous equations

$$\frac{4}{x} + \frac{3}{y} = 1, \frac{8}{x} - \frac{9}{y} = 7.$$



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54. Solve the following simultaneous equations

$$\frac{2}{x} - \frac{3}{y} = 15, \quad \frac{8}{x} + \frac{5}{y} = 77.$$



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55. Solve the following simultaneous equations

$$\frac{2}{x} + \frac{2}{3y} = \frac{1}{6}, \quad \frac{3}{x} + \frac{2}{y} = 0.$$



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56. Solve the following simultaneous equations

$$\frac{148}{x} + \frac{231}{y} = \frac{527}{xy}, \quad \frac{231}{x} + \frac{148}{y} = \frac{610}{xy}.$$



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57. Solve the following simultaneous equations

$$\frac{7x - 2y}{xy} = 5, \frac{8x + 7y}{xy} = 15.$$



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58. Solve the following equations.

$$\frac{27}{x - 2} + \frac{31}{y + 3} = 85, \frac{31}{x - 2} + \frac{27}{y + 3} = 89.$$



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59. Solve the following simultaneous equations.

$$\frac{7}{2x + 1} + \frac{13}{y + 2} = 27, \frac{13}{2x + 1} + \frac{7}{y + 2} = 33.$$



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60. Solve the following simultaneous equations

$$\frac{10}{x+y} + \frac{2}{x-y} = 4, \quad \frac{15}{x+y} - \frac{5}{x-y} = -2.$$



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61. Solve the following simultaneous equations

$$\frac{1}{3x+y} + \frac{1}{3x-y} = \frac{3}{4}, \quad \frac{1}{2(3x+y)} - \frac{1}{2(3x-y)} = -\frac{1}{8}$$



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62. Solve the following simultaneous equations

$$\frac{1}{2(3x + 4y)} + \frac{1}{5(2x - 3y)} = \frac{1}{4}.$$



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63. Two numbers differ by 3. The sum of twice the smaller number and thrice the greater number is 19. Find the numbers.



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64. The denominator of a fraction is 4 more than twice the numerator. Denominator becomes 12 times the

numerator, if both the numerator and denominator are reduced by 6. Find the fraction.



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65. Solve the following problem using two variables: A two digit number and the number with digits interchanged add up to 143. In the given number the digit in unit's place is 3 more than the digit in the ten's place. Find the original number.



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66. Kantabai bought 1.5kg tea and 5kg sugar from a shop. She paid ₹50 as fare for rickshaw. Total expense was

₹700. Then she realised that by ordering online the goods can be bought with free home delivery at the same price. So next month she placed the order online for 2 kg tea and 7 kg sugar and paid ₹880. Find the rate of sugar and tea per kg.



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67. In a factory the ratio of salary of skilled and unskilled workers is 5:3. Total salary of one day of both of them is ₹720. Find daily wages of skilled and unskilled workers.



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68. Two types of boxes A and B are to be placed in a truck having capacity of 10 tons. When 150 boxes of type A and 100 boxes of type B are loaded in the truck, it weighs 10 tons. But when 260 boxes of type A are loaded in the truck, it can still accommodate 40 boxes of B so that it is fully loaded. Find the weight of each type of box.



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69. The sum of father's age and twice the age of his son is 70. If we double the age of the father and add it to the age of his son, the sum is 95. Find their present ages.



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70. Solve the following problem using two variables: Sum of the present ages of Manish and Savita is 33. Manish's age 3 years ago was 4 times the age of Savita. Find their present ages.



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71. Places A and B are 30 km apart and they are on a straight road. Hamid travels from A to B on bike. At the same time Joseph starts from B on bike and travels towards A. They meet each other after 20 minutes. If Joseph would have started from B at the same time but in the opposite direction (instead of towards A), Hamid

would have caught up with him after 3 hours. Find the speed of Hamid and Joseph.



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72. Out of 1900 km, Vishal travelled some distance by bus and some by aeroplane. Bus travels with average speed 60km/hr and the average speed of aeroplane is 700 km/hr. It takes 5 hours to complete the journey. Find the distance travelled by Vishal in bus.



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Exercise

1. To draw graph of $4x + 5y = 19$, find y when $x=1$.

Options: a) 4 b) 3 c) 2 d) -3



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2. For simultaneous equations in variables x and y ,

$D_x = 49$, $D_y = -63$, $D=7$ then what is x ? a) 7 b) -7 c) $1/7$

d) $-1/7$

A. 7

B. -7

C. $\frac{1}{7}$

D. $-\frac{1}{7}$

Answer:



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3. Find the value of: $\begin{vmatrix} 5 & 3 \\ -7 & -4 \end{vmatrix}$

a) -1

b) -41

c) 41

d) 1

A. -1

B. -41

C. 41

D. 1

Answer:



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4. To solve $x + y = 3$, $3x - 2y - 4 = 0$ by determinant method, find D.



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5. $ax + by = c$ and $mx + ny = d$ and $an \neq bm$ then these simultaneous equations have, a) only one common solution b) No solution c) Infinite number of solutions d) Only two solutions

A. only one common solution

B. No solution

C. Infinite number of solutions

D. Only two solutions

Answer:



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6. The general form of linear equation in two variables is:

a) $ax+b=0$ b) $ax+by=c$ c) $ax^2+bx+c=0$ d) None of these

A. $ax + b = 0$

B. $ax + by = c$

C. $ax^2 + x + c = 0$

D. None of these

Answer:



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7.is one of the solution of equation

$$3x - 5y = 10 : \text{a) } (0,2) \text{ b) } (2,0) \text{ c) } (-2,0) \text{ d) } (0,-2)$$

A. (0,2)

B. (2,0)

C. (-2,0)

D. (0,-2)

Answer:



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8. If $12x + 13y = 29$ and $13x + 12y = 21$ then the value of $x + y$ is _____

A. 1

B. 25

C. 2

D. 50

Answer:



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9. Express the following information in mathematical form using x and y variables: one number is 5 more than seven times the other number: a) $x-5y=7$ b) $x-7y=5$ c) $x+7y=5$ d) $x-7y=-5$

A. $x - 5y = 7$

B. $x - 7y = 5$

C. $x + 7y = 5$

D. $x - 7y = -5$

Answer:



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10. Write D_x for the following simultaneous equations

$$3x + 4y = 8, x - 2y = 5 \quad \text{a) } \begin{vmatrix} 3 & 4 \\ 1 & -2 \end{vmatrix} \quad \text{b) } \begin{vmatrix} 8 & 4 \\ 5 & -2 \end{vmatrix} \quad \text{c)}$$

$$\begin{vmatrix} 4 & 8 \\ -2 & 5 \end{vmatrix} \quad \text{d) } \begin{vmatrix} 3 & 8 \\ 1 & 5 \end{vmatrix}$$

A. $\begin{vmatrix} 3 & 4 \\ 1 & -2 \end{vmatrix}$

B. $\begin{vmatrix} 8 & 4 \\ 5 & -2 \end{vmatrix}$

C. $\begin{vmatrix} 4 & 8 \\ -2 & 5 \end{vmatrix}$

D. $\begin{vmatrix} 3 & 8 \\ 1 & 5 \end{vmatrix}$

Answer:



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11.is the solution of given simultaneous equation $x - y = 7$, $x + y = 11$ a) (-3,-8) b) (-9,-2) c) (9,2) d) (6,5)

A. (-3,-8)

B. (-9,-2)

C. (9,2)

D. (6,5)

Answer:



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12. When we consider two linear equations in two variables, such equations are called as.....a) simultaneous equations b) linear equation c) quadratic equation d) non-linear equation

A. simultaneous equation

B. linear equation

C. quadratic equation

D. non-linear equation

Answer:



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13.is not a linear equation in two variables. a) $x+7y=1$
b) $3x+4y-xy=0$ c) $3x+9=4y-1$ d) $3x=4y$

A. $x + 7y = 1$

B. $3x + 4y - xy = 0$

C. $3x + 9 = 4y - 1$

D. $3x = 4y$

Answer:



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14. The linear equation in two variables is.....a) $3x+9=$
 $\sqrt{2}y+2$ b) $3x-4y+xy=0$ c) $2m-8=4m$ d) $3x-14=9$

A. $3x + 9 = \sqrt{2}y + 2$

B. $3x - 4y + xy = 0$

C. $2m - 8 = 4m$

D. $3x - 14 = 9$

Answer:



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15. The pair of simultaneous equations from the following is.....(1) $2x + 2y = 7$ (2) $4x + 3z = 9$ (3) $3y + 4z = 8$ (4) $3z + 9x = 18$ a) 1 and 2 b) 2 and 3 c) 3 and 4 d) 2 and 4

A. 1 and 2

B. 2 and 3

C. 3 and 4

D. 2 and 4

Answer:



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16. Equation of X axis is.....a) $x=0$ b) $y=0$ c) $x=b$ d) $y=a$

A. $x=0$

B. $x=b$

C. $y=0$

D. $y=a$

Answer:



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17. The co-ordinates of the point of origin are.....a)

(0,0) b)(1,0) c)(0,1) d)(1,1)

A. (0,0)

B. (1,0)

C. (0,1)

D. (1,1)

Answer:



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18. If the value of the determinant $\begin{vmatrix} m & -2 \\ 2 & 1 \end{vmatrix}$ is 7, then value of m is.....a)-3 b)3 c)-7 d)7

A. -3

B. 3

C. -7

D. 7

Answer:



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19. x and y are the dimensions of a rectangle and its perimeter is 64. This information is expressed in mathematical equation as.....a) $\frac{1}{2}(x+y)=64$ b) $2(x+y)=64$
c) $xy=64$ d) $xy/2=64$

A. $\frac{1}{2}(x + y) = 64$

B. $2(x + y) = 64$

C. $x \times y = 64$

D. $\frac{xy}{2} = 64$

Answer:



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20. The value of determinant $\begin{vmatrix} 5 & 2 \\ 7 & 4 \end{vmatrix}$ is.....a)6 b)-6 c)34
d)-34

A. 6

B. -6

C. 34

D. -34

Answer:

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21. If $D_x = -18$ and $D = 3$ are values of determinant for certain simultaneous equations in x and y then value of x

is.....a)6 b)-6 c)0 d)9

A. + 6

B. - 15

C. - 6

D. + 15

Answer:



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22. Find m, if value of determinant $\begin{vmatrix} m & 2 \\ -5 & 7 \end{vmatrix}$ is 31. a)14 b)3
c)4 d)12

A. 14

B. 3

C. 28

D. 21

Answer:



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23. If $(a, 3)$ lies on graph of equation $5x + 2y = -4$ then

$a = \dots\dots\dots$ a) 2 b) -2 c) $\frac{2}{5}$ d) $-\frac{2}{5}$

A. 2

B. -2

C. $\frac{2}{5}$

D. $-\frac{2}{5}$

Answer:



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24. The simultaneous equations $3x + 5y = 16$ and $4x - y = 6$ have.....a)unique solution b)no solution c)infinitely many solutions d)None of these

A. unique solution

B. no solution

C. infinitely many solutions

D. None of these

Answer:



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25. If simultaneous equations do not have any solution, then their graph will be.....a) parallel lines
b) coincident lines c) intersecting lines d) can't be determined

- A. in parallel lines
- B. is coincident lines
- C. is intersecting lines
- D. can't be determined

Answer:



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26. By Cramer's rule, the value of x is.....a) Dx/D b) $Dy/$

D c) D/Dx d) D/Dy

A. $\frac{D}{D_x}$

B. $\frac{D_x}{D}$

C. $\frac{D_y}{D}$

D. $\frac{D}{D_y}$

Answer:



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27. Solve the following equations.

$$3x - y = 2, 5x - 2y = 1$$



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28. Solve the following equations.

$$47x + 31y = 2, 31x + 47y = 15$$



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29. Solve the following equations.

$$4m + 3n = 18, 3m - 2n = 5$$



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30. Solve the following equations.

$$2x - 3y = 14, 5x + 2y = 16$$



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31. Solve the following equations.

$$\frac{1}{3}x + 5y = 13, 2x + \frac{1}{2}y = 19$$



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32. Solve the following equations.

$$\left(\frac{1}{3}\right)x + \left(\frac{1}{4}\right)y = 4, \left(\frac{5}{6}\right)x - \left(\frac{1}{8}\right)y = 4$$



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33. Solve the following equations.

$$64m - 45n = 289, 45m - 64n = 365$$

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34. Solve the following simultaneous equations:

$$x + y = 8, x - y = 2$$

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35. Solve the following simultaneous equations:

$$3x + 4y = -5, x - y = -4$$

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36. Solve the following simultaneous equations:

$$x + 3y = 7, 2x + y = -1$$

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37. Solve the following simultaneous equations:

$$x + 2y = 5, 2x + y = -2$$

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38. Solve the following simultaneous equations:

$$4x - y = -5, 2x - y = -1$$



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39. Find the value of following determinant: $\begin{vmatrix} 5 & -2 \\ -3 & 1 \end{vmatrix}$



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40. Find the value of following determinant: $\begin{vmatrix} -3 & 8 \\ 6 & 0 \end{vmatrix}$



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41. Find the value of following determinant: $\begin{vmatrix} \frac{1}{2} & -\frac{2}{3} \\ \frac{3}{4} & -\frac{4}{5} \end{vmatrix}$



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42. Solve the following simultaneous equations using Cramer's rule: $3x - 2y = 3$, $2x + y = 16$

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43. Solve the following simultaneous equations using Cramer's rule: $x + 2y + 4 = 0$, $3x = -4y - 16$.

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44. Solve the following simultaneous equations using Cramer's rule: $3x - y = 7$, $x + 4y = 11$

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45. Solve the following simultaneous equations using Cramer's rule: $3x + y = 1$, $2x = 11y + 3$

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46. Solve the following simultaneous equations using Cramer's rule: $4x + 3y = 4$, $6x + 5y = 8$.

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47. Solve the following simultaneous equations:
 $\frac{4}{x} + \frac{3}{y} = 1$, $\frac{8}{x} - \frac{9}{y} = 7$

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48. Solve the following simultaneous equations:

$$\frac{7}{2x+1} + \frac{13}{y+2} = 27, \quad \frac{13}{2x+1} + \frac{7}{y+2} = 33$$

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49. Solve the following simultaneous equations:

$$\frac{14}{x+y} + \frac{3}{x-y} = 5, \quad \frac{21}{x+y} - \frac{2}{x-y} = 1$$

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50. Solve the following simultaneous equations:

$$\frac{5}{x-1} + \frac{1}{y-2} = 2, \quad \frac{6}{x-1} - \frac{3}{y-2} = 1$$

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51. Shabana's age 10 years hence will be twice of Juhi's present age. 6 years ago Shabana's age was $\frac{5}{3}$ times Juhi's age at that time. Find their present ages.



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52. If 1 is added to the numerator of a certain fraction its value becomes $\frac{1}{2}$ and if 1 is added to its denominator then value of fraction becomes $\frac{1}{3}$. Find the original fraction.



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53. Sum of two numbers is 45 and the greater number is twice the smaller number. Find the numbers.



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54. A man travels 370 km partly by train and partly by car. If he covers 250 km by train and the rest by car, it takes him 4 hours. But, if he travels 130 km by train and the rest by car, he takes 18 minutes longer. Find the speed of the train and that of the car.



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55. The pair of simultaneous equations from the following is.....1) $2x+2y=7$ 2) $4x+3z=9$ 3) $3y+4z=8$
4) $3z+9x=18$ a) 1 and 2 b) 2 and 4 c) 1 and 3 d) 3 and 4

A. $2x + 2y = 7$

B. $4x + 3z = 9$

C. $3y + 4z = 8$

D. $3z + 9x = 18$

Answer:



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56. If $ax + by = c$ and $mx + ny = d$ and $an \neq bm$, then these simultaneous equations have.....a) Only one solution b) No solution c) Infinite number of solutions d) Only two solutions

- A. Only one common solution
- B. No solution
- C. Infinite number of solutions
- D. Only two solutions

Answer:



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57. Write D_x for the following simultaneous equations:

$$5x + 2y = 10, \quad -3x + y = -11$$

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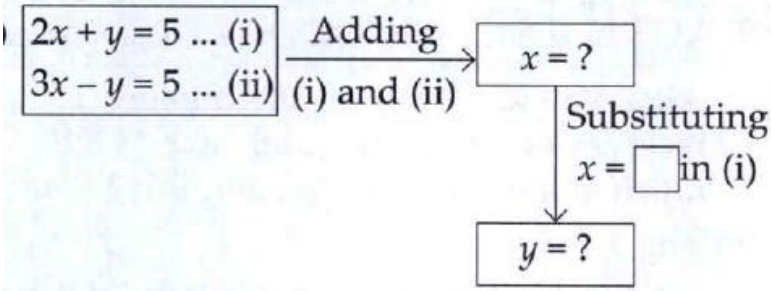
58. Find the value of the following determinant: $\begin{vmatrix} 5 & 7 \\ 2 & 4 \end{vmatrix}$

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59. $\sqrt{2}x - \sqrt{5}y = 16$, Is the equation a linear equation in two variables?

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60.



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61. Solve the following simultaneous equations:

$$x + y = 8, x - y = 2.$$

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62. Find the value of the following determinant: $\begin{vmatrix} \frac{7}{8} & \frac{5}{3} \\ \frac{3}{2} & \frac{1}{2} \end{vmatrix}$



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63. Find the value of the following determinant: $\begin{vmatrix} 3 & -1 \\ 1 & 4 \end{vmatrix}$

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64. The perimeter of rectangle is 40 cm. The length of rectangle is 2 cm more than twice its breadth. Find the length and the breadth of the rectangle.

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65. Solve $15x + 17y = 21$, $17x + 15y = 11$. Complete the following activity.



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66. A boat takes 6 hours to travel 8km up stream and 32 km down stream and it takes 7 hours to travel 20 km upstream and 16 km downstream. Find the speed of the boat in still water and the speed of the stream.



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67. Solve the following simultaneous equations:

$$2x + 3y = 12, x - y = 1.$$



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68. The sum of two digit number and the number obtained by reversing the order of its digits is 143. The digit at ten's place is greater than digit at unit's place by 3. Find the original number.



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69. The weight of a bucket is 15kg, when it is filled with water upto $\frac{3}{5}$ of its capacity and the weight is 19 kg, if it is filled with water upto $\frac{4}{5}$ of its capacity. Find the weight of bucket, if it is completely filled with water.



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70. Abdul travelled 300 km by train and 200 km by taxi, it took him 5 hours 30 minutes. But if he travelled 260km by train and 240 km by taxi, he takes 6 minutes longer. Find the speed of the train and that of the taxi.



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71. When the son will be as old as his father today, the sum of their ages then will be 126, when the father was as old as his son is today, the sum of their ages then was 38. Find their present ages.



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72. The forewheel of a carriage makes 6 revolutions more than the rearwheel in going 120 m. If the diameter of the forewheel be increased by $\frac{1}{4}$ its present diameter and the diameter of the rearwheel be increased by $\frac{1}{5}$ of its present diameter, then the forewheel makes 4 revolutions more than the rearwheel in going the same distance. Find the circumference of each wheel of the carriage.

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73. Find the area of the triangle formed by the following lines and X axis $4x - 3y + 4 = 0$ and $4x + 3y - 20 = 0$

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74. Solve $2^x + 3^y = 17$, $2^{x+2} - 3^{y+1} = 5$

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75. A person deposits ₹ x in savings bank account at the rate of 5% per annum and ₹ y in fixed deposit at 10% per annum. At the end of the year, he gets ₹400 as total interest. If he deposits ₹ y in savings bank account and ₹ x in fixed deposit, he would get ₹350 as total interest. Find the total amount he deposited.

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76. The sum of the digits of a number consisting of three digits is 12. The middle digit is equal to half of the sum of the other two. If the order of the digit be reversed, the number is diminished by 198. Find the number.



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77. A train covered a certain distance at a uniform speed. If the train would have been 6 km/hr faster, it would have taken 4 hours less than the scheduled time. And, if train were slower by 6km/hr, it would have taken 6 hours more than the scheduled time. Find the length of the journey.



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78. Solve: $(a - b)x + (a + b)y = a^2 - 2ab - b^2$ and
 $(a + b)(x + y) = a^2 + b^2$



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