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पढना हुआ आसान

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EXERCISE 3.1 - Question No. 1

Aftab tells his daughter Seven years ago, I was seven times as old as you were then. Also, three years from now. I shall be three times as old as you will be. (Isn't this interesting?) Represent this situation algebraically and graphically.

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EXERCISE 3.1 - Question No. 2

The coach of a cricket team buys 3 bats and 6 balls for Rs 3900. Later, she buys another bat and 2 more balls of the same kind for Rs 1300. Represent this situation algebraically and geometrically.

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EXERCISE 3.1 - Question No. 3

The cost of 2 kg of apples and 1kg of grapes on a day was found to be Rs 160. After a month, the cost of 4 kg of apples and 2 kg of grapes is Rs 300. Represent the situation algebraically and geometrically.

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EXERCISE 3.2 - Question No. 1

Form the pair of linear equations in the following problems, and find their solutions graphically. (i) 10 students of Class X took pan in a Mathematics quiz. If the number of girls is 4 more than the number of boys, find the number of boys and girls who took part in the quiz. (ii) 5 pencils and 7 pens together cost Rs 50, whereas 7 pencils and 5 pens together cost Rs 46. Find the cost of one pencil and that of one pen.

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EXERCISE 3.2 - Question No. 2

On comparing the ratios $\frac{a_1}{a_2}$, $\frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$, find out whether the lines representing the following pairs of linear equations intersect at a point, are parallel or coincident :

$(i) 3x + 2y = 5; 2x - 3y = 7 (ii) 2x - 3y = 8; 4x - 6y = 9 (iii) \left(\frac{3}{2}\right.$

$= 14 (iv) 5x - 3y = 11; -10x + 6y = -22 (vi) \left(\frac{4}{3}\right) x + 2y = 8$

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EXERCISE 3.2 - Question No. 3

On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$, find out whether the following pair of linear equations are consistent, or inconsistent. (i)

$3x + 2y = 5; 2x - 3y = 7$ (ii) $2x - 3y = 8; 4x - y = 9$ (iii)

$\frac{3}{2}x + \frac{5}{3}y = 7; 9x - 10y = 14$ (iv)

$5x - 3y = 11; -10x + 6y = -22$ (v)

$\frac{4}{3}x + 2y = 8; 2x + 3y = 12$

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EXERCISE 3.2 - Question No. 4

Which of the following pairs of linear equations are consistent / inconsistent? If consistent, obtain the solution graphically : `(i)\ \ \ \ \ \ x+y=5,\ 2x+2y=10(i i)\ \ \ \ \ \ \ x y=8,\ 3x 3y=16(i i i)\ \ \ \ \ \ 2x+y 6=0,\ \ 4x 2y-4=0(i v)\ \ \ \

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EXERCISE 3.2 - Question No. 5

Half the perimeter of a rectangular garden, whose length is 4 m more than its width, is 36 m. Find the dimensions of the garden.

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EXERCISE 3.2 - Question No. 6

Given the linear equation $2x + 3y8 = 0$, write another linear equation in two variables such that the geometrical representation of the pair so formed is: (i) intersecting lines (ii) parallel lines (iii) coincident lines

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EXERCISE 3.2 - Question No. 7

Draw the graphs of the equations $xy + 1 = 0$ and $3x + 2y12 = 0$. Determine the coordinates of the vertices of the triangle formed by these lines and the xaxis, and shade the triangular region.

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EXERCISE 3.3 - Question No. 1

Solve the following pair of linear equations by the substitution

method. (i) $x + y = 14; x - y = 4$ (ii) $s - t = 3; \frac{s}{3} + \frac{t}{2} = 6$ (iii)

$3x - y = 3; 9x - 3y = 9$ (iv)

$0.2x + 0.3y = 1.3; 0.4x + 0.5y = 2.3$ (v)

$\sqrt{2}x + \sqrt{3}y = 0; \sqrt{3}x - \sqrt{8}y = 0$ (vi)

$3\frac{x}{2} - 5\frac{y}{2} = -2; \frac{x}{3} + \frac{y}{2} = \frac{13}{6}$

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EXERCISE 3.3 - Question No. 2

Solve $2x + 3y = 11$ and $2x4y = 24$ and hence find the value of 'm'

for which $y = mx + 3$.

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EXERCISE 3.3 - Question No. 3

Form the pair of linear equations for the following problems and find their solution by substitution method. (i) The difference between two numbers is 26 and one number is three times the other. Find them. (ii) The larger of two supplementary

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EXERCISE 3.4 - Question No. 1

Solve the following pair of linear equations by the elimination method and the substitution method: (i) $x + y = 5 \; and \; 2x3y = 4$ (ii)

$2x + 4y = 10$ *and* $2x2y = 2$ (iii) $3x5y4 = 0$ *and* $9x = 2y + 7$ (iv)

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

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EXERCISE 3.4 - Question No. 2

Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method: (i) If we add 1 to the numerator and subtract 1 from the denominator, a fraction reduces to 1. It becomes $\frac{1}{2}$ if we on

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EXERCISE 3.5 - Question No. 1

Which of the following pairs of linear equations has unique solution, no solution, or infinitely many solutions. In case there is a unique solution, find it by using cross multiplication method.

$(i) x - 3y - 3 = 0; 3x - 9y - 2 = 0$

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EXERCISE 3.5 - Question No. 2

(i) For which values of a and b does the following pair of linear equations have an infinite number of solutions?

$2x + 3y = 7 \qquad (ab)x + (a + b)y = 3a + b2$ (ii) For which value of k will the following pair of linear equations have

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EXERCISE 3.5 - Question No. 3

Solve the following pair of linear equations by the substitution and crossmultiplication methods: $8x + 5y = 93x + 2y = 4$

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EXERCISE 3.5 - Question No. 4

Form the pair of linear equations in the following problems and find their solutions (if they exist) by any algebraic method : (i) A part of monthly hostel charges is fixed and the remaining depends on the number of days one has taken food in th

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EXERCISE 3.6 - Question No. 1

Solve the following pairs of equations by reducing them to a pair of linear equations: (i) $\frac{1}{2x}+\frac{1}{3y}=2\,;\,\frac{1}{3x}+\frac{1}{2y}=\frac{13}{6}$ (ii) $\frac{2}{\sqrt{x}}+\frac{3}{\sqrt{y}}=2\,;\,\frac{4}{\sqrt{x}}-\frac{9}{\sqrt{y}}=-1$ (iii) $\frac{4}{x}+3y=14\,;$ $\frac{3}{x}-4y=23$ (iv) `5/(x-1)+1/

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EXERCISE 3.6 - Question No. 2

Formulate the following problems as a pair of equations, and hence find their solutions: (i) Ritu can row downstream 20 km in 2 hours, and upstream 4 km in 2 hours. Find her speed of rowing in still water and the speed of the current. (ii) 2 women and 5 men can together

finish an embroidery work in 4 days, while 3 women and 6 men can finish it in 3 days. Find the time taken by 1 woman alone to finish the work, and also that taken by 1 man alone. (iii) Roohi travels 300 km to her home partly by train and partly by bus. She takes 4 hours if she travels 60 km by train and the remaining by bus. If she travels 100 km by train and the remaining by bus, she takes 10 minutes longer. Find the speed of the train and the bus separately.

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EXERCISE 3.7 - Question No. 1

The ages of two friends Ani aid Biju differ by 3 years. Ani's father Dharam is twice as old as Ani and Biju is twice as old as his sister

Cathy. The ages of Cathy and Dharam differ by 30 years. Find the ages of Ani and Biju.

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EXERCISE 3.7 - Question No. 2

One says, Give me a hundred, friend ! I shall then become twice as rich as you. The other replies. 'If you give me ten, I shall be six times as rich as you. Tell me what is the amount of their (respective) capital? [From the Bijaganita of Bhaskara II]

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EXERCISE 3.7 - Question No. 3

A train covered a certain distance at a uniform speed. If the train would have been 10 km/h faster, it would have taken 2 hours less than the scheduled tune. And. if the train were slower by 10 km/h; it would have taken 3 hours more than the scheduled time. Find the distance covered by the train.

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EXERCISE 3.7 - Question No. 4

The students of a class are made to stand in rows. If 3 students are extra in a row; there would be 1 row less. If 3 students are less in a row, there would be 2 rows more. Find the number of students in the class.

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EXERCISE 3.7 - Question No. 5

In a $\Delta ABC, \angle C = 3, \angle B = 2(\angle A + \angle B)$. Find the three angles.

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EXERCISE 3.7 - Question No. 6

Draw the graphs of the equations $5xy = 5$ and $3xy = 3$. Determine the coordinates of the vertices of the triangle formed by these lines and the y axis.

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EXERCISE 3.7 - Question No. 7

Solve the following pair of linear equations: (i)

$px + qy = pq;\ qxpy = p + q$ (ii) $ax + by = c;\ bx + ay = 1 + c$

(iii) $\frac{x}{a} - \frac{y}{b} = 0$; $ax + by = a^2 + b^2$ (iv)

$(a - b)x + (a + b)y = a^2 - 2ab - b^2;\ (a + b)(x + y) = a^2 + b^2$

(v) `152 x 378 y= 74 ;\ 378

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EXERCISE 3.7 - Question No. 8

ABCD is a cyclic quadrilateral (see Figure). Find the angles of the cyclic quadrilateral.

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SOLVED EXAMPLES - Question No. 1

Akhila goes to a fair with Rs 20 and wants to have rides on the Giant Wheel and play Hoopla. Represent this situation algebraically and graphically (geometrically).

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SOLVED EXAMPLES - Question No. 2

Romila went to a stationery shop and purchased 2 pencils and 3 erasers for Rs 9. Her friend Sonali saw the new variety of pencils and erasers with Romila, and she also bought 4 pencils and 6 erasers of the same land for Rs 18. Represent this situation algebraically and graphically.

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SOLVED EXAMPLES - Question No. 3

Two rails are represented by the equations

$x + 2y - 4 = 0$ *and* $2x + 4y - 12 = 0$. Represent this situation geometrically.

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SOLVED EXAMPLES - Question No. 4

Check whether the pair of equations $x + 3y = 6 \ldots (1)$ and $2x3y = 12 \ldots (2)$ is consistent. If so, solve them graphically.

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SOLVED EXAMPLES - Question No. 5

Graphically, find whether the following pair of equations has no solution, unique solution or infinitely many solutions: $5x8y + 1 = 0$ . . . (1) $3x - \frac{24}{5}y + \frac{3}{5} = 0$ . . . (2)

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SOLVED EXAMPLES - Question No. 6

Champa went to a 'Sale' to purchase some pants and skirts. When her friends asked her how many of each she had bought, she answered, The number of skirts is two less than twice the number of pants purchased. Also, the number of skirts is four less than four times the

number of pants purchased. Help her friends to find how many pants and skirts Champa bought.

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SOLVED EXAMPLES - Question No. 7

Solve the following pair of equations by substitution method :

$7x15y = 2 \ldots (1)\ x + 2y = 3 \ldots (2)$

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SOLVED EXAMPLES - Question No. 8

Solve question no. 1 of exercise 1 by the method of substitution.

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SOLVED EXAMPLES - Question No. 9

Let us consider Example 2 in Section 3.3, i.e., the cost of 2 pencils and 3 erasers is Rs 9 and the cost of 4 pencils and 6 erasers is Rs 18. Find the cost of each pencil and each eraser.

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SOLVED EXAMPLES - Question No. 10

Let us consider the Example 3 of Section 3.2. Will the rails cross each other?

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SOLVED EXAMPLES - Question No. 11

The ratio of incomes of two persons is $9:7$ and the ratio of their expenditures is $4:3$. If each of them manages to save Rs 2000 per month, find their monthly incomes.

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SOLVED EXAMPLES - Question No. 12

Use elimination method to find all possible solutions of the following pair of linear equations: $2x + 3y = 8$ $4x + 6y = 7$

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SOLVED EXAMPLES - Question No. 13

The sum of a twodigit number and the number obtained by reversing the digits is 66. If the digits of the number differ by 2, find the number. How many such numbers are there?

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SOLVED EXAMPLES - Question No. 14

From a bus stand in Bangalore. if we buy 2 tickets to Malleswaram and 3 tickets to Yeshwanthpur, the total cost is Rs 46; but if we buy 3 tickets to Malleswaram and 5 tickets to Yeshwanthpur the total cost is Rs 74. Find the fares from the bus stand to Malleswaram, and to Yeshwanthpur.

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SOLVED EXAMPLES - Question No. 15

For which values of p does the pair of equations given below has unique solution? $4x + py + 8 = 02x + 2y + 2 = 0$

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SOLVED EXAMPLES - Question No. 16

For what values of k will the following pan of linear equations have infinitely many solutions? $kx + 3y(k3) = 012x + kyk = 0$

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SOLVED EXAMPLES - Question No. 17

Solve the pair of equations : $\frac{2}{x} + \frac{3}{y} = 13\ \frac{5}{x} - \frac{4}{y} = -2$

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SOLVED EXAMPLES - Question No. 18

Solve the following pair of equations by reducing them to a pair of linear equations: $\frac{5}{x-1}+\frac{1}{y-2}=2\ \frac{6}{x-1}-\frac{3}{y-2}=1$

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SOLVED EXAMPLES - Question No. 19

A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km downstream. Determine the speed of the stream and that of the boat in still water.

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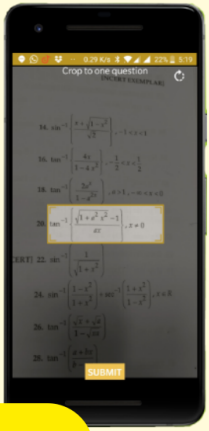

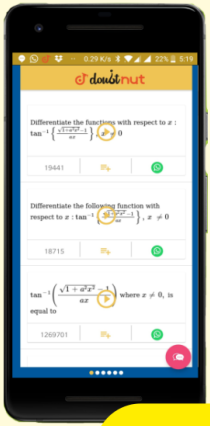

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