MCQ WORKSHEET

CLASS X : CHAPTER - 1
REAL NUMBERS

1. If HCF and LCM of two numbers are 4 and 9696, then the product of the two numbers is:
(a) 9696 (b) 24242 (c) 38784 (d) 4848

2. If a and b are positive integers, then HCF (a, b) x LCM (a, b) =
(a) a x b (b) a + b (c) a – b (d) a/b

3. If the HCF of two numbers is 1, then the two numbers are called
(a) composite (b) relatively prime or co-prime
(c) perfect (d) irrational numbers

4. The HCF of 52 and 130 is
(a) 52 (b) 130 (c) 26 (d) 13

5. The HCF of smallest composite number and the smallest prime number is
(a) 0 (b) 1 (c) 2 (d) 3

6. Given that HCF(1152, 1664) = 128 the LCM(1152, 1664) is
(a) 14976 (b) 1664 (c) 1152 (d) none of these

7. The HCF of two numbers is 23 and their LCM is 1449. If one of the numbers is 161, then the other number is
(a) 23 (b) 207 (c) 1449 (d) none of these

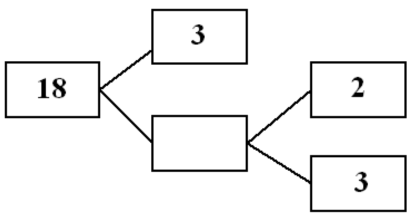
8. The product of L.C.M and H.C.F. of two numbers is equal to
(a) Sum of numbers (b) Difference of numbers
(c) Product of numbers (d) Quotients of numbers

9. L.C.M. of two co-prime numbers is always
(a) product of numbers (b) sum of numbers
(c) difference of numbers (d)none

10. What is the H.C.F. of two consecutive even numbers
(a) 1 (b)2 (c) 4 (d) 8

11. What is the H.C.F. of two consecutive odd numbers
(a) 1 (b) 2 (c) 4 (d) 8

12. The missing number in the following factor tree is
(a) 2 (b) 6 (c) 3 (d) 9



13. If the HCF of 65 and 117 is expressible in the form 65m – 117, then the value of m is
(a) 4 (b) 2 (c) 1 (d) 3

14. The largest number which divides 70 and 125, leaving remainders 5 and 8, respectively, is
(a) 13 (b) 65 (c) 875 (d) 1750

15. If two positive integers *a* and *b* are written as $a = x^3y^2$ and $b = xy^3$; *x*, *y* are prime numbers, then HCF (*a*, *b*) is
(a) xy (b) xy^2 (c) x^3y^3 (d) x^2y^2

16. If two positive integers *p* and *q* can be expressed as $p = ab^2$ and $q = a^3b$; *a*, *b* being prime numbers, then LCM (*p*, *q*) is
(a) ab (b) a^2b^2 (c) a^3b^2 (d) a^3b^3

17. The product of a non-zero rational and an irrational number is
(a) always irrational (b) always rational
(c) rational or irrational (d) one

18. The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is
(a) 10 (b) 100 (c) 504 (d) 2520

PRACTICE QUESTIONS
CLASS X : CHAPTER - 1
REAL NUMBERS

1. Show that 12^n cannot end with the digit 0 or 5 for any natural number *n*.

2. In a morning walk, three persons step off together and their steps measure 40 cm, 42 cm and 45 cm, respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps?

3. If LCM (480, 672) = 3360, find HCF (480,672).

4. The numbers 525 and 3000 are both divisible only by 3, 5, 15, 25 and 75. What is HCF (525, 3000)? Justify your answer.

5. Explain why $3 \times 5 \times 7 + 7$ is a composite number.

6. Can two numbers have 18 as their HCF and 380 as their LCM? Give reasons.

7. Find the largest number which divides 245 and 1029 leaving remainder 5 in each case.

8. Find the largest number which divides 2053 and 967 and leaves a remainder of 5 and 7 respectively.

9. Two tankers contain 850 litres and 680 litres of kerosene oil respectively. Find the maximum capacity of a container which can measure the kerosene oil of both the tankers when used an exact number of times.

10. In a morning walk, three persons step off together. Their steps measure 80 cm, 85 cm and 90 cm respectively. What is the minimum distance each should walk so that all can cover the same distance in complete steps?

11. Find the least number which when divided by 12, 16, 24 and 36 leaves a remainder 7 in each case.

12. The length, breadth and height of a room are 825 cm, 675 cm and 450 cm respectively. Find the longest tape which can measure the three dimensions of the room exactly.

13. Determine the smallest 3-digit number which is exactly divisible by 6, 8 and 12.

14. Determine the greatest 3-digit number exactly divisible by 8, 10 and 12.

15. The traffic lights at three different road crossings change after every 48 seconds, 72 seconds and 108 seconds respectively. If they change simultaneously at 7 a.m., at what time will they change simultaneously again?

16. Three tankers contain 403 litres, 434 litres and 465 litres of diesel respectively. Find the maximum capacity of a container that can measure the diesel of the three containers exact number of times.

17. Find the least number which when divided by 6, 15 and 18 leave remainder 5 in each case.

18. Find the smallest 4-digit number which is divisible by 18, 24 and 32.

19. Renu purchases two bags of fertiliser of weights 75 kg and 69 kg. Find the maximum value of weight which can measure the weight of the fertiliser exact number of times.

20. In a seminar, the number, the number of participants in Hindi, English and Mathematics are 60, 84 and 108, respectively. Find the minimum number of rooms required if in each room the same number of participants are to be seated and all of them being in the same subject.

21. 144 cartons of Coke cans and 90 cartons of Pepsi cans are to be stacked in a canteen. If each stack is of the same height and is to contain cartons of the same drink, what would be the greatest number of cartons each stack would have?

22. A merchant has 120 litres of oil of one kind, 180 litres of another kind and 240 litres of third kind. He wants to sell the oil by filling the three kinds of oil in tins of equal capacity. What would be the greatest capacity of such a tin?

23. In a morning walk, three persons step off together and their steps measure 80 cm, 85 cm and 90 cm, respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps?

24. A circular field has a circumference of 360 km. Three cyclists start together and can cycle 48, 60 and 72 km a day, round the field. When will they meet again?

25. Find the smallest number which leaves remainders 8 and 12 when divided by 28 and 32 respectively.

26. Find the smallest number which when increased by 17 is exactly divisible by 520 and 468.

27. Find the greatest numbers that will divide 445, 572 and 699 leaving remainders 4, 5 and 6 respectively.

28. Find the greatest number which divides 2011 and 2423 leaving remainders 9 and 5 respectively

29. Find the greatest number which divides 615 and 963 leaving remainder 6 in each case.

30. Find the greatest number which divides 285 and 1249 leaving remainders 9 and 7 respectively.

31. Find the largest possible positive integer that will divide 398, 436, and 542 leaving remainder 7, 11, 15 respectively.

32. Given that HCF (306, 657) = 9, find the LCM(306, 657).

33. Why the number 4^n, where n is a natural number, cannot end with 0?

34. Why is 5 x 7 x 11 + 7 is a composite number?

35. Explain why 7 x 11 + 13 + 13 and 7 x 6 x 5 x 4 x 3 x 2 x 1 + 5 are composite numbers.

36. In a school there are two sections – section A and section B of class X. There are 32 students in section A and 36 students in section B. Determine the minimum number of books required for their class library so that they can be distributed equally among students of section A or section B.

37. Determine the number nearest 110000 but greater than 100000 which is exactly divisible by each of 8, 15 and 21.

38. Three sets of English, Hindi and Mathematics books have to be stacked in such a way that all the books are stored topic wise and the height of each stack is the same. The number of English books is 96, the number of Hindi books is 240 and the number of Mathematics books is 336. Assuming that the books are of the same thickness, determine the number of stacks of English, Hindi and Mathematics books.

39. Find the HCF and LCM of 144, 180 and 192 by using prime factorization method.

40. Find the HCF and LCM of 17, 23 and 37 by using prime factorization method.

41. Prove that $5-2\sqrt{3}$ is an irrational number.

42. Prove that $\frac{2\sqrt{3}}{5}$ is an irrational number.

43. Prove that $7+3\sqrt{2}$ is an irrational number.

44. Prove that $2+3\sqrt{5}$ is an irrational number.

45. Prove that $\sqrt{2}+\sqrt{3}$ is an irrational number.

46. Prove that $\sqrt{3}+\sqrt{5}$ is an irrational number.

47. Prove that $7-2\sqrt{3}$ is an irrational number.

48. Prove that $3-\sqrt{5}$ is an irrational number.

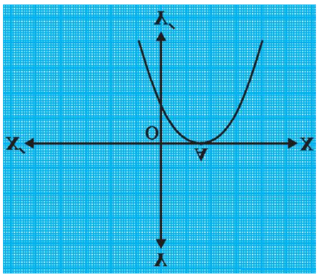
49. Prove that $\sqrt{2}$ is an irrational number.

50. Prove that $7-\sqrt{5}$ is an irrational number

MCQ WORKSHEET
CLASS X : CHAPTER - 2
POLYNOMIALS

1. The value of k for which (–4) is a zero of the polynomial $x^2 - x - (2k + 2)$ is
(a) 3 (b) 9 (c) 6 (d) –1

2. If the zeroes of the quadratic polynomial ax2 + bx + c, $c \neq 0$ are equal, then
(a) c and a have opposite sign (b) c and b have opposite sign
(c) c and a have the same sign (d) c and b have the same sign



3. The number of zeroes of the polynomial from the graph is
(a) 0 (b) 1 (c) 2 (d) 3

4. If one of the zero of the quadratic polynomial $x^2 + 3x + k$ is 2, then the value of k is
(a) 10 (b) –10 (c) 5 (d) –5

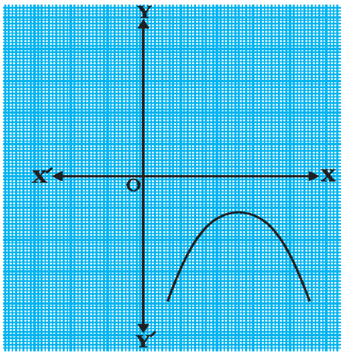
5. A quadratic polynomial whose zeroes are –3 and 4 is
(a) $x^2 - x + 12$ (b) $x^2 + x + 12$ (c) $2x^2 + 2x - 24$. (d) none of the above.

6. The relationship between the zeroes and coefficients of the quadratic polynomial $ax^2 + bx + c$ is (a) $\alpha + \beta = \frac{c}{a}$ (b) $\alpha + \beta = \frac{-b}{a}$ (c) $\alpha + \beta = \frac{-c}{a}$ (d) $\alpha + \beta = \frac{b}{a}$

7. The zeroes of the polynomial $x^2 + 7x + 10$ are
(a) 2 and 5 (b) –2 and 5 (c) –2 and –5 (d) 2 and –5

8. The relationship between the zeroes and coefficients of the quadratic polynomial $ax^2 + bx + c$ is (a) $\alpha.\beta = \frac{c}{a}$ (b) $\alpha.\beta = \frac{-b}{a}$ (c) $\alpha.\beta = \frac{-c}{a}$ (d) $\alpha.\beta = \frac{b}{a}$

9. The zeroes of the polynomial $x^2 - 3$ are
(a) 2 and 5 (b) –2 and 5 (c) –2 and –5 (d) none of the above



10. The number of zeroes of the polynomial from the graph is
(a) 0 (b) 1 (c) 2 (d) 3

11. A quadratic polynomial whose sum and product of zeroes are –3 and 2 is
(a) $x^2 - 3x + 2$ (b) $x^2 + 3x + 2$ (c) $x^2 + 2x - 3$. (d) $x^2 + 2x + 3$.

12. The zeroes of the quadratic polynomial $x^2 + kx + k$, $k \neq 0$,
(a) cannot both be positive (b) cannot both be negative
(c) are always unequal (d) are always equal

13. If α, β are the zeroes of the polynomials $f(x) = x^2 + x + 1$, then $\frac{1}{\alpha} + \frac{1}{\beta}$
(a) 0 (b) 1 (c) –1 (d) none of these

14. If one of the zero of the polynomial f(x) = $(k^2 + 4)x^2 + 13x + 4k$ is reciprocal of the other then k =

(a) 2 (b) 1 (c) –1 (d) – 2

15. If α, β are the zeroes of the polynomials f(x) = $4x^2 + 3x + 7$, then $\frac{1}{\alpha}+\frac{1}{\beta}$

(a) $\frac{7}{3}$ (b) $\frac{-7}{3}$ (c) $\frac{3}{7}$ (d) $\frac{-3}{7}$

16. If the sum of the zeroes of the polynomial f(x) = $2x^3 - 3kx^2 + 4x - 5$ is 6, then value of k is

(a) 2 (b) 4 (c) –2 (d) – 4

17. The zeroes of a polynomial *p*(*x*) are precisely the *x*-coordinates of the points, where the graph of *y* = *p*(*x*) intersects the

(a) x – axis (b) y – axis (c) origin (d) none of the above

18. If α, β are the zeroes of the polynomials f(x) = $x^2 - p(x + 1) - c$, then $(\alpha+1)(\beta+1)$ =

(a) c – 1 (b) 1 – c (c) c (d) 1 + c

19. If α, β are the zeroes of the polynomials f(x) = $x^2 + 5x + 8$, then $\alpha+\beta$

(a) 5 (b) –5 (c) 8 (d) none of these

20. If α, β are the zeroes of the polynomials f(x) = $x^2 + 5x + 8$, then $\alpha.\beta$

(a) 0 (b) 1 (c) –1 (d) none of these

21. A quadratic polynomial whose sum and product of zeroes are –3 and 4 is

(a) $x^2 - 3x + 12$ (b) $x^2 + 3x + 12$ (c) $2x^2 + x - 24$. (d) none of the above.

22. A quadratic polynomial whose zeroes are $\frac{3}{5}$ and $\frac{-1}{2}$ is

(a) $10x^2 - x - 3$ (b) $10x^2 + x - 3$ (c) $10x^2 - x + 3$ (d) none of the above.

23. A quadratic polynomial whose sum and product of zeroes are 0 and 5 is

(a) $x^2 - 5$ (b) $x^2 + 5$ (c) $x^2 + x - 5$. (d) none of the above.

24. A quadratic polynomial whose zeroes are 1 and –3 is

(a) $x^2 - 2x - 3$ (b) $x^2 + 2x - 3$ (c) $x^2 - 2x + 3$ (d) none of the above.

25. A quadratic polynomial whose sum and product of zeroes are –5 and 6 is

(a) $x^2 - 5x - 6$ (b) $x^2 + 5x - 6$ (c) $x^2 + 5x + 6$ (d) none of the above.

PRACTICE QUESTIONS

CLASS X : CHAPTER - 2

POLYNOMIALS

1. Find the quadratic polynomial whose zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$.

2. Find the quadratic polynomial whose zeroes are $\frac{3-\sqrt{3}}{5}$ and $\frac{3+\sqrt{3}}{5}$.

3. Find a quadratic polynomial whose sum and product of zeroes are $\sqrt{2}$ and 3 respectively.

4. If m and n are zeroes of the polynomial $3x^2 + 11x - 4$, find the value of $\frac{m}{n}+\frac{n}{m}$

5. If a and b are zeroes of the polynomial $x^2 - x - 6$, then find a quadratic polynomial whose zeroes are (3a + 2b) and (2a + 3b).

6. If p and q are zeroes of the polynomial $t^2 - 4t + 3$, show that $\frac{1}{p}+\frac{1}{q}-2pq+\frac{14}{3}=0$.

7. If 2 and – 3 are the zeroes of the polynomial $x^2 + (a + 1)x + b$, then find the value of a and b.

8. If the product of zeroes of the polynomial $ax^2 - 6x - 6$ is 4, find the value of 'a'.

9. If one zero of the polynomial $(a^2 + 9)x^2 + 13x + 6a$ is reciprocal of the other. Find the value of a.

10. Write a quadratic polynomial, sum of whose zeroes is $2\sqrt{3}$ and their product is 2.

11. Find a polynomial whose zeroes are 2 and –3.

12. Find the zeroes of the quadratic polynomial x^2+5x+6 and verify the relationship between the zeroes and the coefficients.

13. Find the sum and product of zeroes of $p(x) = 2(x^2 - 3) + x$.

14. Find a quadratic polynomial, the sum of whose zeroes is 4 and one zero is 5.

15. Find the zeroes of the polynomial $p(x) = \sqrt{2}x^2 - 3x - 2\sqrt{2}$.

16. If α and β are the zeroes of $2x^2 + 5(x - 2)$, then find the product of α and β.

17. Find a quadratic polynomial, the sum and product of whose zeroes are 5 and 3 respectively.

18. Find the zeroes of the quadratic polynomial $f(x) = abx^2 + (b^2 - ac)x - bc$ and verify the relationship between the zeroes and its coefficients.

19. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials:

(i) $4x^2 - 3x - 1$
(ii) $3x^2 + 4x - 4$
(iii) $5t^2 + 12t + 7$
(iv) $t^3 - 2t^2 - 15t$
(v) $2x^2 + \frac{7}{2}x + \frac{3}{4}$
(vi) $4x^2 + 5\sqrt{2}x - 3$
(vii) $2s^2 - (1 + 2\sqrt{2})s + \sqrt{2}$
(viii) $v^2 + 4\sqrt{3}v - 15$
(ix) $y^2 + \frac{3}{2}\sqrt{5}y - 5$
(x) $7y^2 - \frac{11}{3}y - \frac{2}{3}$

20. Find the zeroes of the polynomial $x^2 + \frac{1}{6}x - 2$, and verify the relation between the coefficients and the zeroes of the polynomial.

21. If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 2x + 3$, then find a quadratic polynomial whose zeroes are $\alpha+2$ and $\beta+2$

22. If α and β are the zeroes of the quadratic polynomial $f(x) = 3x^2 - 4x + 1$, then find a quadratic polynomial whose zeroes are $\frac{\alpha^2}{\beta}$ and $\frac{\beta^2}{\alpha}$.

23. If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 2x + 3$, then find a quadratic polynomial whose zeroes are $\frac{\alpha - 1}{\alpha + 1}$ and $\frac{\beta - 1}{\beta + 1}$.

24. If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - p(x + 1) - c$, show that $(\alpha + 1)(\beta + 1) = 1 - c$.

25. If α and β are the zeroes of the quadratic polynomial such that $\alpha + \beta = 24$ and $\alpha - \beta = 8$, find a quadratic polynomial having α and β as its zeroes.

MCQ WORKSHEET

CLASS X : CHAPTER - 3

PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

1. The pair of equations y = 0 and y = –7 has
(a) one solution (b) two solution (c) infinitely many solutions (d) no solution

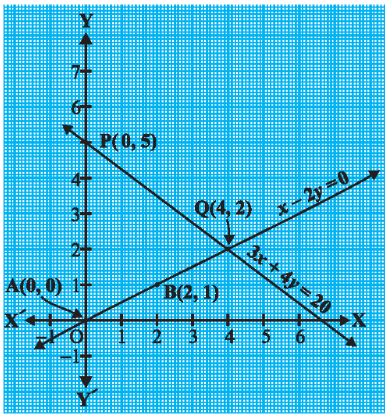
2. The pair of equations x = a and y = b graphically represents the lines which are
(a) parallel (b) intersecting at (a, b)
(c) coincident (d) intersecting at (b, a)

3. The value of c for which the pair of equations cx – y = 2 and 6x – 2y = 3 will have infinitely many solutions is
(a) 3 (b) – 3 (c) – 12 (d) no value

4. When lines l_1 and l_2 are coincident, then the graphical solution system of linear equation have
(a) infinite number of solutions (b) unique solution
(c) no solution (d) one solution

5. When lines l_1 and l_2 are parallel, then the graphical solution system of linear equation have
(a) infinite number of solutions (b) unique solution
(c) no solution (d) one solution

6. The coordinates of the vertices of triangle formed between the lines and y-axis from the graph is
(a) (0, 5), (0, 0) and (6.5,0) (b) (4,2), (0, 0) and (6.5,0)
(c) (4,2), (0, 0) and (0,5) (d) none of these



7. Five years ago Nuri was thrice old as Sonu. Ten years later, Nuri will be twice as old as Sonu. The present age, in years, of Nuri and Sonu are respectively
(a) 50 and 20 (b) 60 and 30 (c) 70 and 40 (d) 40 and 10

8. The pair of equations 5x – 15y = 8 and 3x – 9y = 24/5 has
(a) infinite number of solutions (b) unique solution
(c) no solution (d) one solution

9. The pair of equations x + 2y + 5 = 0 and –3x – 6y + 1 = 0 have
(a) infinite number of solutions (b) unique solution
(c) no solution (d) one solution

10. The sum of the digits of a two digit number is 9. If 27 is added to it, the digits of the numbers get reversed. The number is
(a) 36 (b) 72 (c) 63 (d) 25

11. If a pair of equation is consistent, then the lines will be
(a) parallel (b) always coincident
(c) always intersecting (d) intersecting or coincident

12. The solution of the equations x + y = 14 and x – y =4 is
(a) x = 9 and y = 5 (b) x = 5 and y = 9 (c) x = 7 and y = 7 (d) x = 10 and y = 4

13. The sum of the numerator and denominator of a fraction is 12. If the denominator is increased by b3, the fraction becomes ½ , then the fraction

(a) $\frac{4}{7}$ (b) $\frac{5}{7}$ (c) $\frac{6}{7}$ (d) $\frac{3}{7}$

14. The value of k for which the system of equations x – 2y = 3 and 3x + ky = 1 has a unique solution is

(a) k = – 6 (b) k ≠ – 6 (c) k = 0 (d) no value

15. If a pair of equation is inconsistent, then the lines will be

(a) parallel (b) always coincident

(c) always intersecting (d) intersecting or coincident

16. The value of k for which the system of equations 2x + 3y = 5 and 4x + ky = 10 has infinite many solution is

(a) k = – 3 (b) k ≠ – 3 (c) k = 0 (d) none of these

17. The value of k for which the system of equations kx – y = 2 and 6x – 2y = 3 has a unique solution is

(a) k = – 3 (b) k ≠ – 3 (c) k = 0 (d) k ≠ 0

18. Sum of two numbers is 35 and their difference is 13, then the numbers are

(a) 24 and 12 (b) 24 and 11 (c) 12 and 11 (d) none of these

19. The solution of the equations 0.4x + 0.3y = 1.7 and 0.7x – 0.2y = 0.8 is

(a) x = 1 and y = 2 (b) x = 2 and y = 3 (c) x = 3 and y = 4 (d) x = 5 and y = 4

20. The solution of the equations x + 2y = 1.5 and 2x + y = 1.5 is

(a) x = 1 and y = 1 (b) x = 1.5 and y = 1.5(c) x = 0.5 and y = 0.5(d) none of these

21. The value of k for which the system of equations x + 2y = 3 and 5x + ky + 7 = 0 has no solution is

(a) 10 (b) 6 (c) 3 (d) 1

22. The value of k for which the system of equations 3x + 5y = 0 and kx + 10y = 0 has a non-zero solution is

(a) 0 (b) 2 (c) 6 (d) 8

23. The pair of equations 3x + 4y = 18 and 4x + $\frac{16}{3}$y = 24 has

(a) infinite number of solutions (b) unique solution

(c) no solution (d) cannot say anything

24. If the pair of equations 2x + 3y = 7 and kx + $\frac{9}{2}$y = 12 have no solution, then the value of k is:

(a) $\frac{2}{3}$ (b) – 3 (c) 3 (d) $\frac{3}{2}$

25. The equations x – y = 0.9 and $\frac{11}{x+y} = 2$ have the solution:

(a) x = 5 and y = a (b) x = 3, 2 and y = 2, 3 (c) x = 3 and y = 2 (d) none of these

PRACTICE QUESTIONS

CLASS X : CHAPTER - 3

PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

SOLVING EQUATIONS

Solve for x and y:

1. $11x + 15y + 23 = 0; 7x – 2y – 20 = 0$.

2. $2x + y = 7; 4x – 3y + 1 = 0$.

3. $23x – 29 y = 98; 29x – 23y = 110$.

4. $2x + 5y = \frac{8}{3}; 3x – 2y = \frac{5}{6}$.

5. $4x – 3y = 8; 6x – y = \frac{29}{3}$.

6. $2x - \frac{3}{4}y = 3; 5x = 2y + 7$.

7. $2x – 3y = 13; 7x – 2y = 20$.

8. $3x – 5y – 19 = 0; –7x + 3y + 1 = 0$.

9. $2x – 3y + 8 = 0; x – 4y + 7 = 0$.

10. $x + y = 5xy; 3x + 2y = 13xy; x \neq 0, y \neq 0$.

11. $152x - 378y = -74; -378x + 152y = -604$.

12. $47x + 31y = 63; 31x + 47y = 15$.

13. $71x + 37y = 253; 37x + 71y = 287$.

14. $37x + 43y = 123; 43x + 37y = 117$.

15. $217x + 131y = 913; 131x + 217y = 827$.

16. $41x – 17y = 99; 17x – 41y = 75$.

17. $\frac{b}{a}x + \frac{a}{b}y = a^2 + b^2; x + y = 2ab$

18. $ax + by = a - b; bx - ay = a + b$.

19. $\frac{b^2x}{a} + \frac{a^2y}{b} = ab(a+b); b^2x + a^2y = 2a^2b^2$

20. $2(ax - by) + (a + 4b) = 0; 2(bx + ay) + (b - 4a) = 0$

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

22. $\frac{x}{a} + \frac{y}{b} = a + b; \frac{x}{a^2} + \frac{y}{b^2} = 2$

23. Find the value of k, so that the following system of equations has no solution:

3x – y – 5 = 0; 6x – 2y – k = 0.

24. Find the value of k, so that the following system of equations has a non-zero solution:

3x + 5y = 0; kx + 10y = 0.

Find the value of k, so that the following system of equations has no solution:

25. $3x+y=1; \quad (2k-1)x+(k-1)y=(2k-1).$

26. $3x+y=1; \quad (2k-1)x+(k-1)y=(2k+1).$

27. $(3k+1)x+3y-2=0; \quad (k^2+1)x+(k-2)y-5=0.$

28. $kx+3y=3; \quad 12x+ky=6.$

Find the value of k, so that the following system of equations has a unique solution:

29. $x-2y=3; \quad 3x+ky=1.$

30. $x+2y=5; \quad 3x+ky+15=0.$

31. $kx+3y=(k-3);\ 12x+ky=k.$

32. $4x-5y=k;\ 2x-3y=12.$

For what value of k, the following pair of linear equations has infinite number of solutions:

33. $kx+3y=(2k+1); \quad 2(k+1)x+9y=(7k+1).$

34. $2x+3y=2; \quad (k+2)x+(2k+1)y=2(k-1).$

35. $2x+3y=7; \quad (k-1)x+(k+2)y=3k.$

36. $2x+(k-2)y=k; \quad 6x+(2k-1)y=(2k+5).$

Find the value of a and b for which each of the following systems of linear equations has a infinite number of solutions:

37. $(a-1)x+3y=2; \quad 6x+(1-2b)y=6.$

38. $2x-3y=7; \quad (a+b)x-(a+b-3)y=4a+b.$

39. $2x+3y=7; \quad (a+b+1)x+(a+2b+2)y=4(a+b)+1.$

40. $2x+3y=7; \quad a(x+y)-b(x-y)=3a+b-2$