

Exercises ^[A-2]

Solve the following systems of equations:

1. $\begin{cases} 3x - y = 5 \\ 5x - y = 7 \end{cases}$
 2. $\begin{cases} y = 11 - 3x \\ 5x - 3y = 2 \end{cases}$
 3. $\begin{cases} 3x + 5y = 7 \\ x - 3y = 0 \end{cases}$
 4. $\begin{cases} 2x + y = 4 \\ 4x + 2y = 6 \end{cases}$
 5. $\begin{cases} 3x + 4y = 1 \\ 5x + 3y = 9 \end{cases}$
 6. $\begin{cases} x - y = 1 \\ \frac{y}{x} = \frac{1}{2} \end{cases}$
 7. $\begin{cases} \frac{2x}{3} + \frac{y}{9} = 6 \\ \frac{1}{4}x + \frac{1}{2}y = 5 \end{cases}$
 8. $\begin{cases} .5x + 1.2y = 1.4 \\ .6x - 7.0y = 5.9 \end{cases}$
 9. $\begin{cases} .5x + .2y = 1.65 \\ .7x - .3y = 2.6 \end{cases}$
 10. $\begin{cases} 2x - 3y - 3 = 0 \\ \frac{x+y}{x-y} = \frac{1}{2} \end{cases}$
 11. $\begin{cases} x = 2 - .25y \\ 9x + 1.25y = 15 \end{cases}$
 12. $\begin{cases} \frac{2}{u} + \frac{1}{t} = 7 \\ \frac{2}{u} - \frac{1}{t} = 1 \end{cases}$
 13. $\begin{cases} \frac{3}{x} + \frac{4}{y} = 8 \\ \frac{6}{x} - \frac{3}{y} = 5 \end{cases}$
 14. $\begin{cases} \frac{h}{x} = .45 \\ \frac{h}{x+50} = .30 \end{cases}$
 15. $\begin{cases} \frac{8}{x} + 3y = 5 \\ \frac{6}{x} + 2y = 3 \end{cases}$
 16. $\begin{cases} \frac{1}{5}(x+1) - \frac{1}{2}(3y-1) = 1 \\ \frac{3(2x-1)}{5} - \frac{2(y-3)}{3} = 2 \end{cases}$
 17. $\begin{cases} \frac{3}{2x} - \frac{1}{3y} = 2 \\ \frac{3}{4x} + \frac{5}{6y} = -2 \end{cases}$
18. How many pairs of values of x and y satisfy the equation $x + y = 10$,
 (a) If there is no restriction on the values of the variables?
 (b) If both x and y must be even integers, greater than zero?
 (c) If the value of x must be 25% of the value of y ?
19. If $x = 4t + 3$, and $t = 3 - 2u$, eliminate t by substitution and express x in terms of u . Find the value of u for which $x = 0$.
20. In the equation $\frac{1}{3}(x-2) + \frac{1}{4}y = \frac{1}{2}$, find the value of x if (a) the value of y is $-\frac{2}{3}$, (b) the values of x and y are equal.
21. If the equation $4x - 3y = c$ is satisfied by the pair of values $x = \frac{1}{2}$, $y = -1$, find the value of c .
22. Show that the equations $5x - y = 21$, $x + 3y = 1$, $13x + 7y = 45$ have a common solution.

Exercises ^[B]

1. Show that the equation $\frac{1}{2}x + \frac{1}{3}(y-3) = \frac{1}{3}x + \frac{1}{2}(y-2)$ is equivalent to the equation $x = y$.
2. State the number of solutions that may be found for each of the following pairs of equations:
 - (a) $\begin{cases} 2x + 5y = 8 \\ 4x + 10y = 12 \end{cases}$
 - (b) $\begin{cases} 2x + 5y = 8 \\ 4x + 10y = 16 \end{cases}$
 - (c) $\begin{cases} 2x + 5y = 8 \\ 2x - y = 2 \end{cases}$

- 1. (1, -2)
- 2. $(2\frac{1}{2}, 3\frac{1}{2})$
- 3. $(\frac{3}{2}, \frac{1}{2})$
- 4. No solution
- 5. (3, -2)
- 6. (2, 1)
- 7. (8, ϵ)
- 8. $(4, -\frac{1}{2})$
- 9. (3.5, -0.5)
- 10. $(1, -\frac{1}{3})$
- 11. (1.25, 3)
- 12. $(u, t) = (\frac{1}{2}, \frac{1}{3})$
- 13. $(\frac{3}{4}, 1)$
- 14. $(x, h) = (100, 45)$
- 15. (-2, 3)
- 16. $(\frac{1}{2}, 0)$
- 17. $(\frac{3}{2}, -\frac{1}{3})$
- 18. a. An unlimited number
b. Four: (2, 8), (4, 6), (6, 4), (8, 2)
c. One: (2, 8)

19. $x = 15 - 8u; u = 1\frac{7}{8}$

21. $c = 5$

20. a. $x = 4$ b. $x = 2$

22. (4, -1) is common sol.

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- 2. a. None
b. Unlimited number
c. One
- 3. a. Unlimited number
b. One
c. None
- 4. $y = 4$
- 5. (22, 6)
- 7. $a = 2$
- 8. $(10, 4\frac{1}{2})$
- 9. a. None
b. Unlimited number
c. One
- 10. a. Unlimited number
b. One: $(18\frac{1}{2}, 6\frac{1}{2})$
c. None
- 11. $x = 3$
- 12. $(t, u) = (1\frac{1}{2}, -3\frac{1}{2})$
- 14. $b = -2$
- 15. $(-\frac{1}{2}, -\frac{3}{4})$