Solving Linear Systems by Substitution (ALG.SYS.03)

Evaluate the algebraic expression for the given values of the variables.

1. $\frac{6a^2}{b+1} + 5ab \quad a = -3 \text{ and } b = 2$ **-12**

2. $\frac{m^2-5n}{3n+2m} \quad m = -6 \text{ and } n = 3$ **-7**

3. $-5a + 2b \quad a = x - 1 \text{ and } b = 2x + 9$ **$23 - x$**

4. $3a - 5b \quad a = x + 4 \text{ and } b = 7 - 5x$ **$28x - 23$**

5. $5y + 2m - 4n + 5 \quad m = -6y \text{ and } n = 3 - 5y$ **$13y - 7$**

6. $2a - 7b + 6c \quad a = 2x - 5, b = 3x + 1, \text{ and } c = 2x$ **$-5x - 17$**

Solve each linear system by substitution.

7. $\begin{cases} y = 6x - 20 \\ y = -2x + 12 \end{cases}$ **$(4, 4)$**

8. $\begin{cases} y = -8x + 17 \\ y = 4x - 19 \end{cases}$ **$(3, -7)$**

9. $\begin{cases} y = 2x - 7 \\ y = 3x - 12 \end{cases}$ **$(5, 3)$**

10. $\begin{cases} 3x + 3y = -3 \\ y = -2x - 8 \end{cases}$ **$(-7, 6)$**

11. $\begin{cases} 8x + 8y = -24 \\ y = -2x - 11 \end{cases}$ **$(-8, 5)$**

12. $\begin{cases} y = 3x - 17 \\ -2x + 2y = -18 \end{cases}$ **$(4, -5)$**

13. $\begin{cases} 5y - x = -2 \\ 3x - 15y = -2 \end{cases}$ **No solution**

14. $\begin{cases} 7x + y = 24 \\ -4x + 6y = 6 \end{cases}$ **$(3, 3)$**

15. $\begin{cases} -2x + 5y = -17 \\ x - 3y = 9 \end{cases}$ **$(6, -1)$**

16. $\begin{cases} 2x - y = 8 \\ 4x - 2y = 16 \end{cases}$ **Infinite solutions**

17. $\begin{cases} -x + 7y = -9 \\ 3x - 8y = 1 \end{cases}$ **$(-5, -2)$**

18. $\begin{cases} y = -3x + 5 \\ 6x + 2y = 7 \end{cases}$ **No solution**

19. $\begin{cases} -2x = 8y \\ 8x + y = 0 \end{cases}$ **$(0, 0)$**

20. $\begin{cases} 2y - 8x = 5 \\ 4x - y = 7 \end{cases}$ **No solution**

21. $\begin{cases} 8x + y = 19 \\ -x - y = -5 \end{cases}$ **$(2, 3)$**

22. $\begin{cases} 2x - y = -8 \\ -2x + 4y = -10 \end{cases}$ **$(-7, -6)$**

23. $\begin{cases} 5y = 3x - 6 \\ 6y = 2 - x \end{cases}$ **$(2, 0)$**

24. $\begin{cases} y - 2 = 3(x + 1) \\ 3x - y = -5 \end{cases}$ **Infinite solutions**

25. $\begin{cases} 7x - 3y = -9 \\ -2x = 3 - y \end{cases}$ **$(0, 3)$**

26. $\begin{cases} 3y - x = -8 \\ -3x = 2 - 9y \end{cases}$ **No solution**

27. $\begin{cases} y - 6 = -2(x + 4) \\ y + 4 = 3(x - 1) \end{cases}$ **$(1, -4)$**

28. $\begin{cases} 4x - 3y = -2 \\ y + 7 = -(x - 3) \end{cases}$ **$(-2, -2)$**