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THU

## 16.2] Solving Systems of Equations by Using Algebra

Substitution - algebraic method for solving systems of equations

ex 1) Use substitution....

$$y = x + 4$$

$$2x + y = 1 \rightarrow 2x + (x + 4) = 1$$

$$3x + 4 = 1$$

$$\begin{array}{r} 3x \\ \underline{-4} \\ 3x - 4 \end{array} = \begin{array}{r} 1 \\ \underline{-4} \\ -3 \end{array}$$

$$x = -1$$

$$(-1, 3)$$

$$\begin{array}{l} y = (-1) + 4 \\ y = 3 \end{array}$$

- ✓ isolate a variable
- ✓ substitute into the other equation

ex 1.5) Use substitution to solve:

$$\textcircled{1} 2x - y = 4$$

$$\textcircled{2} x - y = 5$$

$$\begin{array}{r} x - y = 5 \\ \underline{+y} \quad \underline{+y} \\ x = 5 + y \end{array}$$

$$x = 5 + (-6)$$

$$x = -1$$

$$\therefore (-1, -6)$$

- ✓ isolate a variable

$$2(5 + y) - y = 4$$

$$10 + 2y - y = 4$$

$$\begin{array}{r} 10 + y = 4 \\ \underline{-10} \quad \underline{-10} \\ y = -6 \end{array}$$

$$y = -6$$