A System of Two Linear Equations in Two Variables

\[Ax + By = C\]
\[Dx + Ey = F\]

where \(A, B, C, D, E,\) and \(F\) are numbers; and \(x\) and \(y\) are variables

Capitol A solution of the system is an ordered pair of numbers \((a, b)\), such that the replacement of \(x\) by \(a\), and of \(y\) by \(b\), make both equation hold.

Geometrically, a solution \((a, b)\) of the system is a point of intersection of the two lines represented by the two equations of the system.

The Principles of Solving the System by the Substitution Method

**Step 1.** Chose one of the two equations and solve for one variable in terms of the other variable.

**Step 2.** Substitute the expression for the variable found in Step 1 into the other equation.

**Step 3.** You now have one equation with one variable. Solve this equation for that variable.

**Step 4.** Find the value of the other variable by substituting the value found in Step 3 into the expression found in Step 1.

(Step 5. Check the ordered pair solution in both original equations.)