7.2 Two Variable Linear Systems

In section 7.2 you will learn to

- Use the method of elimination to solve systems of linear equations in two variables.
- Interpret graphically and algebraically the number of solutions to a system of linear equations.
- Model and solve real-life problems.

Two variable linear systems

To solve linear equations, we can us a third method, Elimination.

Example:

$3x - 2y = 7$

$8x + 4y = 0$

Elimination

- Multiply the equations by numbers to make the coefficients of one of the variables add to 0.
- Add the two equations together.
- Solve for x or y.
- Back substitute to get the value of the other variable.

Example 2:

$3y = 4x - 5$

$-8x + 6y = 1$

Example 3:

$2x - y = 9$

$-10x + 5y = -45$

Example 4:

Two planes start from LAX and fly in opposite directions. The second plane starts 1/2 hour after the first plane, but its speed is 80 km/h faster. Find the airspeed of each plane if 2 hours after the first plane departs the planes are 3200 km apart.

Example 5

A total of $32,000 is invested in two municipal bonds that pay 5.75% and 6.25% simple interest. The investor wants an annual interest income of $1900 from the investments. What amount should be invested in the 5.75% bond?