Section 4.2 Solving Systems of Linear Equations in Three Variables

# Objective 1: Determining Whether an Ordered Triple is a Solution

A solution of a system of three equations in three variables is an **ordered triple** $(x,y,z)$ that makes all three equations true.

Determine whether the ordered triple $(6,4,3)$ is a solution of the system $\left\{\begin{array}{c}-4x+3y+2z=-6\\-2x+4y-2z=-2\\14x+4y-4z=88\end{array}\right.$.

# Objective 2: Solving a System of Three Linear Equations in Three Variables

Just as with systems of two equations in two variables, we can use the elimination or substitution method to solve a system of three equations in three variables.

Solve each system of equations.

a.$ \left\{\begin{array}{c}x+y+z=5\\4x-y-z=10\\2x-4y-3z=-25\end{array}\right.$

b. $\left\{\begin{array}{c}x+4y-z=8\\-4x-4y-3z=9\\2x+8y+5z=-19\end{array}\right.$

c. $\left\{\begin{array}{c}4x+2y-2z=-18\\y+5z=-41\\3x-2y=-3\end{array}\right.$