

Section 5.5 (Solving Systems of Three Linear Equations in Three Unknowns Algebraically)

Many technical problems involve systems of linear equations with more than two unknowns. In this section, we solve systems with three unknowns algebraically. In the next section, we'll solve by determinants.

The objective for this section is to:

- Solve a system of linear equations in three unknowns algebraically

Solve the given system of equations:

$$2x + y - z = 4$$

1. $4x - 3y - 2z = -2$

$$8x - 2y - 3z = 3$$

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2. $x + y - z = -3$
 $x + z = 2$
 $2x - y + 2z = 3$

3. The computer systems at three weather bureaus have a combined hard-disk memory capacity of 8.0 TB (terabytes). The memory capacity of systems A and C have 0.2 TB more memory than twice that of system B, and twice the sum of the memory capacities of systems A and B is three times that of system C. What are the memory capacities of each of these computer systems?