Assessing the Understanding of Solutions of Equations and Systems: Results from the NSF Rice Mathematics Leadership Institute

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NCTM Regional Conference
Houston, Texas
November 30, 2007
1. a. Find the solution set of the equation \(2(x - 2) + 4(x + 1) = 6x\).

b. Find the solution set of the system of equations \(\begin{align*}
y &= 2(x - 2) + 4(x + 1) \\
y &= 6x
\end{align*}\).

c. Compare and contrast the two solution sets.
Find the solution sets for each of the following one-variable equations:

\[ 2(x - 1) = 2x - 2 \quad x = x + 1 \quad 3(x + 2) = 5x + 4 \]
Compare the solution sets for the following one- and two-variable equations:

\[ 2(x - 1) = 2x - 2 \quad x = x + 1 \quad 3(x + 2) = 5x + 4 \]

\[ x - y = 8 \quad x + y = 3 \quad x - 3y = 6 \]
\[ 2x + y = 1 \quad 2x + 2y = -4 \quad 2x - 6y = 12 \]