Identities, Contradictions and Conditional Equations

Chalkboard

Conditional Equations

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A conditional equation is true for certain values of the variable and false for others.

When we think of solving an equation and getting an answer, we are thinking about a conditional equation.

x + 2 = 7

x = 5

This equation is only true on the condition that x = 5.

Contradictions

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A contradiction is never true. It is false for every value of the variable.

x + 3 = x + 5

-x = -x3 = 5

 $3 \operatorname{can} \operatorname{never} = 5$

This is a contradiction; it has no solution.

Identities

An identity is always true. It is true for every value of the variable.

x + 3 = x + 3

-x = -x

3 always equals 3

3 = 3

This is an identity; it is true for all real numbers.



Identities, Contradictions and Conditional Equations

3 = 3	Identity	All real numbers
3 = 5	Contradiction	No solution
x = 5	Conditional equation	True on the condition that
		$\mathbf{x} = 5$.