Linear Functions

Problem

Let A denote a real number, and consider the system of equations:

$$x + y + z = 10$$
$$2x - 2y + 5z = 7$$
$$Ax + Ay + Az = 5$$

Is it possible for this system to have a unique solution?

(a) Yes
(b) No

Answer: No

- If $A = 1/2$ then two lines are the same resulting in two equations and three unknowns and no unique solution.
- If $A \neq 1/2$, two lines will be parallel, so there is no unique solution.
- This would work well for a graphical interpretation as well as an algebraic one.

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