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**Disappearing  $x$ : when solving does not mean finding the solution set.**

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Summary: This study deals with preservice elementary teachers' responses to linear equations and inequalities that had infinite solution sets. In particular, these tasks dealt with situations where the variable is eliminated during standard symbolic manipulation. The results reveal that infinite solution sets proved difficult for the participants, particularly when prompted to solve the linear equations and inequalities. When the direction prompt was changed, there was increased success in finding the correct solution set. The directional prompts changed the types of solution strategies as well as the nature of responses. In addition, participants stated the belief that different, mathematically equivalent prompts required different, non-equivalent, types of solutions and allowed for different solution strategies.

*Classification:* H39

*Keywords:* preservice elementary teachers; linear equations; inequalities; solution strategies

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