Solving a Quadratic Equation
Case Overview

Background on the Classroom Lesson
This video comes from a pre-calculus class that has been working in small groups to solve quadratic equations.

Student Activity
Solve for x:
$(2x - 1)^2 = 10 - 4x$

Overview of the Video
In the video, one group presents their solution for the problem above to the class. Following the presentation, students raise questions about the steps used in the solution, as well as the number of solutions found. When watching (or re-watching), focus on what the students say about order of operations and the solutions to the equation. Consider what conclusions the students make and what justifications they give.

Questions to Consider about Student Thinking
We think some of the richest student thinking in this video occurs around students' ideas about the sign of the solutions obtained when square rooting, and the necessity of following the standard order of operations when solving an equation. In what follows, we provide sets of questions about these ideas to scaffold analysis of students' ideas.

1) Jeff's Group's Solution:
    a) What strategy did Jeff's group use to solve the equation?
    b) How do students respond to the group's solution?

2) Taking the Square Root:
    a) What ideas about taking square roots do students raise in the video?
    b) Are Damien and Ian thinking about taking the square root in the same way?

3) Order of Operations:
    a) Who believes order of operations is violated, and what reasons do they give?
    b) Who believes order of operations is not violated, and what reasons do they give?
    c) Who believes it doesn't matter, and what reasons do they give?