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Math 300

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11 December 2000

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*Sprouts: More Than Vegetables*

There are many games which have mathematical bases. Checkers, chess, and hex are some good examples. One such game is called Sprouts. Sprouts consists of two players using lines to connect points in such a way that they force their opponent to become “stuck”. An analysis of this game leads to several conjectures that can be made about game play. The first step, however, is to carefully say what is meant by the phrase “a game of Sprouts.”

To begin, a description of the rules and goals of the game is in order. The game starts with a set of points, usually a small number like three or four, in a plane. The first player draws a line segment of any shape which starts on a point and ends on a point. The line segment can start and end on the same point, or start and end on different points. After the segment is drawn, the player must place a new point somewhere on the segment. Now player two must do the same: draw a line segment which starts on a point and ends on a point, and then place a new point on the newly drawn segment. The only conditions which exist are that no one point may have more than three connections to it, and lines cannot cross each other. Players continue taking turns until one of them cannot make another move. That player loses.

The phrase “a game of Sprouts” will refer to the entire process, from the first move by the first player, to the point at which one of the players cannot make another

