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Excavation Definition.
Mathematics instructors expose students to definitions usually by writing them down on the board and providing examples and non-examples to help clarify the concept. But, we often fail to ask students what they think of that mathematical definition or whether the definition did 'make sense' to them. If a concept definition does not make sense to students do we seek out the details of their trouble? Do we seek ways to modify the definition in a manner that that is sense-making to students? During my research on students' conceptual understanding of asymptotes of rational functions we analyzed the informal definition of asymptotes by Stewart that 'informally speaking, an asymptote of a function is a line that the graph of the function gets closer and closer to as one travels along that line.' After debating over this definition, students took turns and drew different figures to accommodate each others perspectives. In the end they unanimously reached consensus on the meaning of this definition and further developed their own definition of asymptotes. This presentation conveys the details of student initiated definition analysis and how if used appropriately, argumentation and debate could provide a powerful tool for a deeper conceptual understanding of mathematics concepts. (Received September 23, 2012)