

Gaps in literature on limits

- Are there significant differences in intuitions/informal approaches for high school students compared with college students?
- Are there significant differences in intuitions/informal approaches for female students compared with male students?
- How do the various spontaneous conceptions/intuitions specifically impact students' ability to construct formal limit ideas (in particular, how do students with these spontaneous conceptions react to unbounded functions, oscillating functions, piecewise functions, etc.)
- A lot of studies referenced students' misconceptions that a limit is not attainable. What impact (if any) does an exploration (using the idea of predictions to introduce the concept of limits and checking that prediction to introduce the concept of continuity) have on this misconception?
- Several studies indicated students resort to their intuitive ideas about limits even when these are in conflict with the formal definition. Which (if any) informal beliefs are more likely to "stick" with students? Are some informal beliefs easier to "eliminate"?
- What impact does instruction that specifically uses intuitive ideas to build the formal epsilon-delta limit definition have on the disconnect between these two parts of the student's concept image?
- Everyday language is a barrier in learning the concepts of limits (limit, tends to, converges, approaches, etc.). Are students' definitions/informal uses of these terms tied to the types of informal limit concepts they hold?
- It was noted that students may approach graphical problems differently than algebraic problems. Do students apply different spontaneous conceptions for different types of representations?