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A comparison of equality in computer algebra and correctness in mathematical pedagogy.

Carette, Jacques (ed.) et al., Intelligent computer mathematics. 16th symposium, Calculemus 2009, 8th international conference, MKM 2009, held as part of CICM 2009, Grand Bend, Canada, July 6–12, 2009. Proceedings. Berlin: Springer (ISBN 978-3-642-02613-3/pbk). Lecture Notes in Computer Science 5625. Lecture Notes in Artificial Intelligence, 75-89 (2009).

Summary: How do we recognize when an answer is “right”? This is a question that has bedevilled the use of computer systems in mathematics (as opposed to arithmetic) ever since their introduction. A computer system can certainly say that some answers are definitely wrong, in the sense that they are provably not an answer to the question posed. However, an answer can be mathematically right without being pedagogically right. Here we explore the differences and show that, despite the apparent distinction, it is possible to make many of the differences amenable to formal treatment, by asking “under which congruence is the pupil’s answer equal to the teacher’s?”.

Classification: D60 U50

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