This note has been motivated by my recent curiosity about the current unpopularity with teachers and textbook writers of that old technique sometimes called synthetic division for numerically evaluating polynomials in a single variable at given numbers. That technique is what one would naturally think to use in programming a computer to do the task efficiently. And it was always popular with students --- they could easily apply it. My conclusion is that it was just unpopular with teachers because the textbook explanations as to why the technique worked were inadequate.

The .pdf attachment is my response as to how the subject could be presented rigorously.

Some teachers simply do not like some subjects. For example, in the late 1970's when Al Lazer found that various sections of the five-hour engineering differential equations course (Boyce and DiPrima) were omitting power series and instead spending three or four weeks on Laplace transforms, he carefully surveyed the various engineering departments. He found the Aeronautical Engineering Department wanted at least three weeks on power series solutions (and expected Bessel's differential equation and Bessel functions to be included) and the Electrical Engineering Department wanted very little on Laplace transforms because they had extensive specialized courses on that subject (and instead suggested that partial-fraction decompositions be treated much more thoroughly in Calculus 2 so that topic would not have to be retaught when inverse Laplace transforms were employed in their courses). More recently, the Harvard Calculus experiment was partly influenced by the desire of some faculty members to drop partial-fraction techniques from Calculus II.