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|  | Title: | *A p-adic Euclidean Algorithm* | |
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|  | Author: | Cortney Lager , Winona State University |  |
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|  | Abstract: | The rational numbers can be completed with respect to the standard absolute value and this produces the real numbers. However, there are other absolute values on the rationals besides the standard one. Completing the rationals with respect to one of these produces the *p*-adic numbers. In this paper, we take some basic number theory concepts and apply them to rational *p*-adic numbers. Using these concepts, a *p*-adic division algorithm is developed along with a *p*-adic Euclidean Algorithm. These algorithms produce a generalized greatest common divisor in the *p*-adics along with a *p*-adic simple continued fraction. | |