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Many algorithms for determining properties of real algebraic or semi-algebraic sets rely upon the ability to compute smooth points. In this talk, I present a simple procedure based on computing the critical points of some well-chosen function that guarantees the computation of smooth points in each connected bounded component of a real atomic semi-algebraic set. Our technique is intuitive in principal, performs well on previously difficult examples, and is straightforward to implement using existing numerical algebraic geometry software. I also present the application of our method to design an efficient algorithm to compute the real dimension of algebraic sets, the original motivation for this research. (Received September 15, 2020)