

3.5 Brackening

The bisectioning algorithm discussed in the last section started with having two limiting points a and b with $f(a) * f(b) < 0$. Actually to find such two points is often the most challenging problem. A good algorithm for brackening is suggested by the bisectioning algorithm. If dividing by a factor of two is a good strategy to reduce the interval length after brackening, increasing the interval length by a factor of two is most probably a good strategy to bracken a zero. Since the direction to find a zero after having defined a starting point is not known, alternating the search direction for brackening a zero is mandatory as well. Bad luck! The interval length for brackening is increasing exponentially, so easily overflow errors may show up, when checking for function values at the limits of the interval tested for brackening a zero. Many more problems may show up. So a good guess for the position of a zero is really helpful, either from a approximate analytic solution, using a drawing, or by iterative update of starting points for brackening zeros.