 Iterative methods

Teaching ideas

Increasingly in the HSC questions, students are being asked about why the method work or doesn’t work in specific situations. See HSC Mathematics Extension 1 2014 Q12 e.

With the advent of the Reference Sheet, this is more likely to occur.

It is important students see and understand situation where Newton’s method fails:

* Horizontal gradient
* Oscillating solutions
* No real solutions
* Getting the “wrong” root (not being close enough in the first approximation)

Syllabus elements

Halving the interval

Newton’s method

Understanding Newton’s method and situations where it doesn’t work

Teaching resources

A little unrelated but still the concept of halving an interval is the video on smoothing surfaces at Pixar Animations <http://gomaths.net/3968>

A simple Geogebra demonstration of Newton’s method <http://gomaths.net/2473> and a more complex, interactive model <http://gomaths.net/4204>.