**ITERATION**

**To solve by an iterative method, rearrange into a form and use the iterative formula**

**Example 1**

Edexcel C3 Jan 2013



a)

b) **, , represent successively better approximations of the root**

Initially type (i.e. 2) onto your calculator.

Now just type:

And then press your key to get successive iterations.

c)

**The starting value matters.**

* If there are a multiple roots, the iteration might converge to (i.e. approach) a different root.
* The iteration not converge to a root at all and **diverges** (i.e. approach infinity).

**Example 2**

1. Show that the equation has a root in the interval .
2. Use the iterative formula to calculate the values of , and , giving your answers to 4 decimal places, and taking:
(i) (ii)

**Staircase and cobweb diagrams**

**Example 3**

1. Show that the root of the equation can be written as
2. Using the iterative formula , and starting with , draw a staircase diagram, indicating on your -axis, as well as the root .

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