Question Number	Scheme	Marks
1(a)	$(f(1)=)1-5+e=-1.281...<0$ $(f(2)=)2^2-5\times2+e^2=1.389...>0$	M1
	As there is a change of sign and $f(x)$ is continuous over the interval $[1, 2]$ then there is a root *	A1*
		(2)
(b)(i)	$x_2=\sqrt{5\times1-e^1}=$ awrt 1.5105	M1A1
(ii)	$\alpha=$ awrt 1.7340	A1
		(3)
		(5 marks)

Notes

(a)

M1: Attempts $f(1)$ and $f(2)$ with substitution seen or at least one correct to 1 d.p. rounded or truncated **and considers their signs**. Note showing f(1)f(2) < 0 is a consideration of signs and is sufficient for the "sign change" part of reasoning for the A1.

A1*: Must have

- both $f(1)$ and $f(2)$ correct (as expressions or correct values imply these, need not be labelled)
- reason, which must mention continuity and state or indicate sign change in some way
- conclusion, "hence root", or accept e.g. hence "f(x)=0 between x =1 and x = 2"

(b)

(i)

M1: Attempts to find x_2 using the iteration formula. Implied by sight of 1 embedded in the formula or awrt 1.5

A1: awrt 1.5105

(ii)

A1: awrt 1.7340 provided M1 has been scored. Allow 1.734 with trailing zero omitted.

Note 1.7340 only may be from a graphical calculator, so scores M0A0A0. There must be evidence (i.e. the M is scored) of an attempt at least one iteration first.