Question Number	Scheme	Marks
3.(a)	<table><tr><th>a</th><th>b</th><th>Qn</th></tr><tr><td>1</td><td>0.967168(21)</td><td>N</td></tr><tr><td>0.967168(21)</td><td>0.972789(34)</td><td>N</td></tr><tr><td>0.972789(34)</td><td>0.971833(85)</td><td>N</td></tr><tr><td>0.971833(85)</td><td>0.971996(47)</td><td>N</td></tr><tr><td>0.971996(47)</td><td>0.971968(80)</td><td>N</td></tr><tr><td>0.971968(80)</td><td>0.971973(50)</td><td>Y</td></tr></table> Final output is 0.97197	M1 A1 A1 A1 **(4)**
(b)	Consideration of $12-5a$ being negative (oe)	M1
	$a > 2.4$	A1 **(2)**
		6 marks

Notes for Question 3

Candidates may write each value for *a*, *b* and N/Y (or No/Yes) in a new row which is fine. Assume that each row begins and ends when a value is changed. For example, the values in row 2 in the table above consists of the *a* value of 0.967168 and the *b* value of 0.972789. In (a) for the first three marks the values for *a* and *b* must be given to <u>at least</u> 6 decimal places (but accepted either rounded or truncated values)

a1M1: At least **three** rows of cells for columns *a* and *b* completed with a correct first row (so 1 for *a* and 0.967168 for *b*)
a1A1: CAO for the first three rows (for just the *a* and *b* columns) – to at least 6 dp
a2A1: CAO for the fourth and fifth rows (for just the *a* and *b* columns) – to at least 6 dp
a3A1: CSO - Output **must** be correct and written in the 'Final Output' box at the bottom of the page. This value must be given as 0.97197 (do not accept any other value). Candidates **must** have completed the third column of the table correctly to score this mark

b1M1: Consideration that the fourth root cannot be negative – allow just stating the critical value of 2.4 for this mark or stating or implying one of $\mathrm{f}(a) \le 0$ or $\mathrm{f}(a) = 0$ or $\mathrm{f}(a) < 0$ where

$\mathrm{f}(a) = 12-5a$ or $\mathrm{f}(a) = \dfrac{12-5a}{8}$ or $\mathrm{f}(a) = (12-5a)^{\frac{1}{4}}$ or $\mathrm{f}(a) = \left(\dfrac{12-5a}{8}\right)^{\frac{1}{4}}$

Allow any letter for *a* (e.g. *x*)
b1A1: CAO (must be a strict inequality and must be using *a*)