**7.** A geometric sequence has first term $a$ and common ratio $r$, where $r > 0$

Given that

- the 3rd term is 20
- the 5th term is 12.8

(a) show that $r = 0.8$

**(1)**

(b) Hence find the value of $a$.

**(2)**

Given that the sum of the first $n$ terms of this sequence is greater than 156

(c) find the smallest possible value of $n$.

(*Solutions based entirely on graphical or numerical methods are not acceptable.*)

**(4)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**Question 7 continued**

**(Total for Question 7 is 7 marks)**

**8.** **In this question you must show all stages of your working.**

**Solutions based entirely on calculator technology are not acceptable.**

(i) Solve, for $-\frac{\pi}{2} < x < \pi$, the equation

$$5\sin(3x + 0.1) + 2 = 0$$

giving your answers, **in radians**, to 2 decimal places.

**(4)**

(ii) Solve, for $0 < \theta < 360°$, the equation

$$2\tan\theta\sin\theta = 5 + \cos\theta$$

giving your answers, **in degrees**, to one decimal place.

**(5)**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA