**10.** **In this question you must show all stages of your working.**
**Solutions relying entirely on calculator technology are not acceptable.**

(a) Show that

$$\cot x - \operatorname{cosec} 2x \equiv \cot 2x \qquad x \neq 90n° \qquad n \in \mathbb{Z}$$

**(4)**

(b) Using

- the answer to part (a)
- suitable trigonometric identities

solve, for $0 < \theta < 90°$, $\theta \neq 75°$ the equation

$$13 + \cot(\theta + 15°) - \operatorname{cosec}(2\theta + 30°) = \operatorname{cosec}^2(2\theta + 30°)$$

Give each of the answers to one decimal place.

**(5)**

**(Total for Question 10 is 9 marks)**

**TOTAL FOR PAPER IS 75 MARKS**