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

Solutions relying entirely on calculator technology are not acceptable.

(a) Use De Moivre's theorem to show that

$$\cos 6\theta \equiv 32\cos^6\theta - 48\cos^4\theta + 18\cos^2\theta - 1$$

(4)

(b) Hence determine the smallest positive root of the equation

$$48x^6 - 72x^4 + 27x^2 - 1 = 0$$

giving your answer to 3 decimal places.

(4)

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Question 9 continued

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Question 9 continued

(Total for Question 9 is 8 marks)