

Question 7**(5 marks)**

The number 2021 can be expressed as a product of two consecutive prime numbers:
 $43 \times 47 = 2021$.

Consider the complex equation $z^{43} = 1$.

- (a) Write an expression for the roots of $z^{43} = 1$. (2 marks)

Let w be any one of the roots of the equation $z^{43} = 1$.

- (b) How many of these roots will also be a solution of the equation $z^{47} = 1$?
Justify your answer. (3 marks)