

Question 6**(5 marks)**

Consider the quartic polynomial $P(z) = z^4 - 6z^3 + 31z^2 - 52z + 60$.

(a) Given that $P(2 + 4i) = 0$, determine a quadratic factor of $P(z)$. (2 marks)

(b) Hence solve the equation $z^4 - 6z^3 + 31z^2 - 52z + 60 = 0$. (3 marks)

Calculations are performed and Anika concludes by stating: 'this sample was clearly not taken from the population of adult response times. It is highly likely that this sample was taken from a sample of 100 teenagers'.

- (c) Perform the necessary calculations and comment on Anika's claim. (4 marks)