**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)