Advanced Higher Maths
SQA 2022 Paper 2
Question 7

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The complex number $z = 3 + i$ is a root of $z^2 - 6z + a = 0$, where a is a real number.

(a) State the second root of $z^2 - 6z + a = 0$. **1**

(b) Hence, or otherwise, find the value of a. **2**

The expression $z^2 - 6z + a$ is a factor of $z^3 - z^2 - 20z + b$, where b is a real number.

(c) Find the value of b. **1**

Answers:

(a) $3 - i$

(b) $a = 10$

(c) $b = 50$