

Advanced Higher Maths  
SQA 2017 Paper  
Question 5



- (a) (i) Use Gaussian elimination on the system of equations below to give an expression for  $z$  in terms of  $\lambda$ .

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$$\begin{aligned}x + 2y - z &= -3 \\4x - 2y + 3z &= 11 \\3x + y + 2\lambda z &= 8\end{aligned}$$

- (ii) For what value of  $\lambda$  is this system of equations inconsistent?

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- (b) Determine the solution of this system when  $\lambda = -2.5$ .

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Answers:

(a) (i)  $z = \frac{11}{4\lambda - 1}$

(ii)  $\lambda = \frac{1}{4}$

(b)  $z = -1, y = -3, x = 2$