Commentary on candidate evidence

The evidence for the following candidates has achieved the marks given below:

Question 1

Candidate 1

The candidate was awarded **2 marks.**

There was evidence of use of the product rule and one term was correct, so mark 1 was awarded. The differentiation was completed correctly, so mark 2 was awarded.

Candidate 2

The candidate was awarded **1 mark.**

There was evidence of use of the product rule and one term was correct, so mark 1 was awarded. The second term of the product was incorrect, so mark 2 was not awarded.

Candidate 3

The candidate was awarded **1 mark.**

There was a transcription error, so mark 1 was not awarded. The differentiation was carried out correctly, so mark 2 was awarded on follow-through.

Question 3

Candidate 4

The candidate was awarded **3 marks.**

The candidate correctly set up an augmented matrix and obtained two zeros, so marks 1 and 2 were awarded. The candidate clearly communicated which final answer was intended. This was the correct one, so mark 3 was awarded.

Candidate 5

The candidate was awarded **2 marks.**

The candidate correctly set up an augmented matrix, so mark 1 was awarded. The candidate made an error in carrying out elementary row operations, so mark 2 was not awarded. The candidate's conclusion was consistent with their final augmented matrix, so mark 3 was awarded on follow-through (and would have been even if they had produced an incorrect unique solution).

Candidate 6

The candidate was awarded **2 marks.**

The candidate correctly set up an augmented matrix and obtained two zeros, so marks 1 and 2 were awarded. The candidate incorrectly interpreted the final augmented matrix, so mark 3 was not awarded.

Question 6(a)

Candidate 7

The candidate was awarded **2 marks.**

The candidate correctly calculated the modulus, so mark 1 was awarded. Although the degree sign did not appear in the polar form expression, it was present in the candidate's working, so mark 2 was awarded.

Candidate 8

The candidate was awarded **1 mark.**

The candidate had correctly calculated both the modulus and argument, and either of these was sufficient for the award of mark 1. However, the candidate used an incorrect value for the argument in the polar form expression, so mark 2 was not awarded.

Candidate 9

The candidate was awarded **1 mark.**

The candidate had correctly calculated both the modulus and argument, and either of these was sufficient for the award of mark 1. However, the candidate gave the square of the required expression, so mark 2 was not awarded. Even if

the expression had not been the square, Mark 2 would not have been awarded, since the numerical value of the modulus was not used.

Question 7(a)

Candidate 10

The candidate was awarded **1 mark.**

The candidate had successfully substituted the formulae, so mark 1 was awarded. In the first line in the additional space for answers, the candidate had written an incorrect expression on the right-hand side, and then produced a factorisation which did not follow from this expression, so mark 2 was not awarded. This could not be treated as a transcription error because it did not involve copying an existing expression.

Candidate 11

The candidate was awarded **2 marks.**

The candidate had successfully substituted the formulae, so mark 1 was awarded. They had expanded brackets, rather than taking out common factors, but managed to complete the algebra to arrive at the required result, so mark 2 was awarded.

Candidate 12

The candidate was awarded **1 mark.**

The candidate had successfully substituted the formulae, so mark 1 was awarded. Although the candidate's final answer was correct, this had been arrived at by two incorrect factorisations, and mark 2 was not awarded.

Question 8(b)

Candidate 13

The candidate was awarded **2 marks.**

The candidate had given the correct form, including the source set, for an odd integer, so mark 1 was awarded. They had factorised correctly and communicated the result, so mark 2 was awarded.

Candidate 14

The candidate was awarded **0 marks.**

The candidate had not given the correct form for an odd integer, so mark 1 was not awarded. They had factorised incorrectly, so mark 2 was not awarded.

Candidate 15

The candidate was awarded **1 mark.**

The candidate had not given the correct form for any odd integer, so mark 1 was not awarded. Although they had not factorised their final expression, their communication was sufficient for mark 2 to be awarded in accordance with note 4 of the marking instructions.

Question 9

Candidate 16

The candidate was awarded **0 marks.**

In part (a), the candidate had given an incorrect expression for the rotation matrix, so mark 1 was not awarded.

In part (b)(i), the candidate had used a different expression for the matrix and had not evaluated the result of the multiplication, so mark 2 was not awarded.

(In neither part had the candidate established that the relevant cosine was equal to zero.)

In part (b)(ii), the candidate had given an incorrect angle, so mark 3 was not awarded.

In part (c), the value given did not match the angle given by the candidate in the previous part, so mark 4 was not awarded