

**QUESTION 1**

- 1.1 Well answered.
- 1.2 Reference angle/final answer given as a negative angle. Seldom reached the final answer.
- 1.3 Candidates failed to apply the properties of perpendicular lines. It was clear that candidates are able to determine the gradients of perpendicular lines, but they lack the skills to apply it.
- 1.4 Well answered, although careless calculation errors were frequently made. Some candidates did not realize that they could accept the numerical value given in 1.3.
- 1.5 Poorly answered. Candidates ignored the concept of parallel lines, and consequently substituted the coordinates of D or E.
- 1.6 It is encouraging that candidates immediately knew that they needed to calculate the length of two sides.

**QUESTION 2**

- 2.1.1 Well answered. A mark was deducted if the final answer was given incorrectly as  $x^2 + y^2 = 5$ .
- 2.1.2 Poorly answered. They failed to see the link between the radius of the circle and x-intercept.
- 2.1.3 Poorly answered. The candidates failed to see the link between the gradients of a radius and a tangent, therefore labelled the gradient of OA as BD.
- 2.1.4 Instead of substituting the coordinates of A, candidates invented coordinates for B and D.
- 2.1.5 Most candidates used the distance formula – they failed to see the connection between the y-coordinate of D and the length of the requested line segment.
- 2.2 Candidates used the distance formula instead of the gradient.

**QUESTION 3**

- 3.1 Although candidates showed the diagram in the second quadrant,  $\hat{e}$  was not shown to be an obtuse angle. Otherwise well answered.
- 3.2 Fairly well answered, but co-functions and correct signs for reductions need attention.
- 3.3 Fairly well answered, candidates appeared to know function values for special angles. Once again correct signs for reductions need attention.

**QUESTION 4**

- 4.1 The drawing of the graphs were well done. Note that incorrect labelling ( $f$  and  $g$ ) resulted in zero marks. Candidates were penalised for drawing beyond  $180^\circ$ .
- 4.2.1 Note that  $[1;-1]$  or  $\{-1;1\}$  is not an acceptable way of expressing an interval. No marks were given when the range was given as  $x \in [-1;1]$  or  $-1 \leq x \leq 1$ .
- 4.2.2 & 4.2.3 Interpretation of graphs needs a lot attention.
- 4.3 Badly answered.

## QUESTION 5

- 5.1 Candidates still tend to use  $x$ ,  $y$  and  $r$  and ignored the request to use fundamental identities. Once  $\tan \theta$  was  $\frac{\sin \theta}{\cos \theta}$  attempts to simplify the fraction failed.
- 5.2.1 Poorly answered. See note at 1.2.
- 5.2.2 Candidates experiences difficulty determining a ratio using reciprocals with the calculator.

## QUESTION 6

- 6.1 Poor understanding of the proof was displayed.
- 6.2.1 and 6.2.2 Fairly well answered. Again the determining of the obtuse angle posed a problem.
- 6.3 It was clear that most candidates lacked the skill and knowledge required to answer this question.

## QUESTION 7

Although this question seemed to be very straightforward and open to various approaches, candidates ended with wrong answers.

## QUESTION 8

- 8.1 Formal proof of this theorem needs attention.
- 8.2.1 Candidates should be encouraged to read the information related to the diagram. Failing to do so lead to errors such as referring to  $\hat{A}_5$  or  $\hat{A}_2$  as  $\hat{N}_5$  or  $\hat{C}_2$ .
- 8.2.2 – 8.2.3 Candidates should be able to distinguish between using a theorem or its converse as a reason. Marks were deducted for incorrect phrasing of the converse.

## QUESTION 9

- 9.1 See note at 8.1.
- 9.2.1 Well answered. Incidents where candidates incorrectly used lengths to prove similarity were still encountered.
- 9.2.2 Most candidates failed to use the similarity proved in 9.2.1.
- 9.3.1 Well answered. Candidates must remember to provide reasons when using statements.
- 9.3.2 Poorly answered.