***Year 11 Methods - Semester 2 Exam - Examiner’s Report***

**Booklet 1**

**Question 1**

This question was not done as well as it should have been.

1. Many did not convert to base 3 which made the answer hard to find. An answer of 9 ^ (-3/2) was not enough to attract a mark.
2. Some did not know what scientific notation meant.
3. Some interesting and incorrect number facts were used here. Some tried to use base 4 or even 16. Convert to base 2 to make the approach easier. Some left the answer as 2.5 /8 which was penalised.

**Question 2**

1. Poorly done. Solve the problem for 2x between -pi/2 and pi/2 then divide answers by 2.

Many did not recognise the presence of two solutions. Many needed to work in degrees which is OK but convert back at the end.

1. Far too many simply divided by x and got x = 9 as the only solution. This is very poor technique at this level. A quadratic usually has two solutions.
2. Mostly OK – a few did not know how to proceed.

**Question 3**

1. Too many did not use the correct turning point form of the quadratic. Clear thinking is required here. What do you know? What can change?
2. Poorly done. No penalties were applied for poor notation. Many did not consider correctly what happened at x = 3 or 5.

**Question 4**

Both parts of this question were done well.

**Question 5**

a) Some very poor numerical work meant some did not get the answers right.

b) Most found c but many could not calculate the sum of the first three terms. Use of the formula is harder than simply adding. Numerical work seems to be an issue for some.

**Question 6**

a) Poorly done – most got k = 3.5 but then failed to recognise the negative horizontal translation of 105 degrees. A few considered a negative k value and a positive horizontal translation of 75 degrees.

b) Generally OK but there are some who regularly do not use brackets which is essential on a “showing” question.

c) Many did not recognise the connection to part b) so needed to do a new expansion. Some did not know their exact values. Again, the use of brackets to ensure the signs of the terms are correct was missing form some students.

**Question 7**

This question was generally done well. Some equated the derivative to 0 instead of 6 which led to problems.

**Question 8**

a) Generally Ok but greater precision in the use of mathematical language needs to be used. For some it was not clear when x changed to 2.

b) It is essential to use the result from part a). Some just did a new differentiation from first principles.

**Booklet 2**

**Question 9**

1. Done well. Please note the rounding of money, 2 d.p.
2. Graph drawn well. Some students did not accurately plot the (0,13.5) and (10, 0.8)\
3. The value of t was calculated accurately, but some students did not use their calculation to answer the question, which clearly stated during which year will the cost of………..and the context used was 2008 and 2015.

**Question 10**

1. Well answered
2. Well answered
3. Well answered
4. Well answered

**Question 11**

1. Answered well. Some students left out their units.
2. Answered well.
3. Values not always clearly stated.
4. Students needed to address the value and the period in order to obtain full marks.

**Question 12**

1. Drawing the chord to the curve had to be labelled A and B. And correct values used to be awarded full marks.
2. Well answered. Some students lost marks because of their rounding.
3. Students did not answer this question well. The use of your calculator would have help you with this one.

**Question 13**

1. done quite well but a few misunderstandings of key information which cost a few students through the whole question. When drawing Venn diagrams, ensure that you have a box around everything.
2. Fractions should be left as un-simplified for probability and there is no need to waste your time converting them to decimals or percentages. If you do convert and get the conversion wrong you risk losing the mark.
3. This was NOT a yes/no question so answer it properly! Poor reading cost many students, who didn’t use the answers they had already find for the justification.

**Question 14**

1. Done well for those who were able to use their calculator to locate key points and transcribe them onto the graph. Be accurate with your plotting and connect the dots with a smooth shape curve – there are no pointy triangles in a trig graph!
2. Mostly done well but some students included the variable in the period, which is incorrect.
3. Reading let down a few students – the question asked for one cycle only.

**Question 15**

Very poorly done question. Time management was clearly an issue for some towards the end of this booklet, and interpretation was difficult for others.

1. Common error was forgetting to minus one in the power.
2. Use of CAS is assumed. You need to still show what you are looking for ie. What equation are you solving or what lines in the ‘sequence’ app are you looking at and why?
3. Poor use of sum formula for some students. Many marks lost for incorrect rounding.

**Booklet 3**

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| Question | Contents | Comments |
| Q16 | Counting and probability | In general, give 4 decimal places for probability answers. In part (b) some students mistakenly considered to choose 5 novels rather than 7. Some students also wrongly used $\left(\begin{matrix}11\\3\end{matrix}\right)+\left(\begin{matrix}5\\4\end{matrix}\right)$ to find the ways to choose 4 of the novels by Hay. |
| Q17 | Rectilinear motion | This question can be easily done using CAS calculator - - - students need to learn more to use CAS wisely. Many students used the wrong unit in (b) (ii). Again use CAS to help graph the function in (c). Students need to read question carefully --- label all important points, some students didn’t have enough labels. In part (d) many students had negative speed. |
| Q18 | Non-linear graphs | (a) Some students didn’t know how to find the radius of the circle. Some got the centre wrong or the wrong equation $(x+4)^{2}+(y-3)^{2}=17$(b) (i) Well-answered  (ii) Some students had their graphs not  including the given points and  some forgot the asymptotes |
| Q19 | Optimization | (a) Some students failed to express r, R and h in terms of x and some didn’t provide enough/clear steps to obtain final expression(b) Generally well answered, but some answers didn’t include justifying the nature of the turning point. |
| Q20 | Radian, sector and trigonometry | (a) Well-answered(b) Many students considered the canvas awning as a segment(c) Some students thought ∠M = 90°  |