

## Year 12 Methods Semester 2 Exam Feedback- Section One

Mean: 68%

### Question 1:

- (a) (i) No problems here
- (a) (ii) Whilst most students successfully used log laws to simplify only some students double checked that the  $-9$  solution was not possible do to it not being valid in the original equation.
- (b) (i) No problems here
- (b) (ii) A handful of students did not represent the values as a coordinate as asked by the question.

### Question 2:

- (a) (i) No problems here
- (a) (ii) No problems here
- (b) Please try to be explicit in your working that you are using the product rule. It will help the WACE markers easily grant you a mark as per the behaviours.
- (c) This question was not done very well. It was a little different to this type of question we have encountered previously. It can help to write out the integral statement as a first step to essentially see what is missing and then add/subtract what is missing. I awarded a mark for the integral statement being present.

### Question 3:

- (a) No problems here. A few students missed the value on the y-axis.
- (b) (i) No issues here.
- (b) (ii) This question was answered very poorly by almost all students. It can often help to use the pdf you drew in part one to include the unknown and then create the equation to solve from this.
- (c) This was a bread and butter question but was done very poorly. The mean and st.dev was provided in the original question. Perhaps students did not recognise this as a change of origin/scale question. The students who did either performed slack calculations or they incorrectly applied the rule to the st.dev.

Question 4:

- (a) Several students forgot to include the negative sign. As a general rule I always apply it to the numerator in my working if it is out the front. It just prevents this issue happening.
- (b) Again, please be explicit that you are using the quotient rule. It will give you an easy mark even if you fail to do it correctly. This is one such question where simplifying first may actually help you later as you need to substitute which caused issues for some students. Please take care with these questions. They are easy marks but not if you make simple mathematical errors.
- (c) This question was done OK. Some students did not realise they were dealing with a log function. Remember if you integrate and get a power of 0 this generally means you have a log function to deal with. A large proportion of students also did not remember to include the +c which in turn altered your solution. The solutions tackled the question a little differently to how I did it which involved integrating then solving for c then subbing in 2.

Question 5:

- (a) This question was attempted OK. It highlighted the importance of reading the question carefully as it was asking when the press was “increasing at the greatest rate” i.e. the maximum rate which required a second derivative. Some people went about it a different way other than calculus however the question stated “using calculus” which meant no marks could be awarded. PLEASE READ THE QUESTION.
- (b) Whilst most students recognised the need to integrate here it was done poorly. Either the c was not included or it was assumed that  $F(0)=0$  which was not the case. This continues to catch students out.
- (c) Again students misinterpreted the question and used  $t=2.5$  or  $t=6$  which was incorrect. Max Force required solving  $dF/dt = 0$  then subbing that time value into the force equation from part (b). Whilst follow through marks were awarded it was a very messy question overall.

Question 6:

- (a) No real issues here.
- (b) The graph was done quite poorly as there was a lot of information to process. This is something that could be worked on leading into WACE but I would say this was the most difficult question of Section 1. Most students did understand the meaning of the second derivative being positive meaning the function was concave up and there was an inflection point at 4.2.

Question 7:

- (a) Again some slackness or mental fatigue set in here with many students missing the derivative of the inside function which meant the derivative was a negative. A question like this was 2 easy marks.
- (b) Some students assumed that the gradient of the function had to match the gradient of the chord as they were intersecting at point B. This is not always the case. Two functions can intersect but their derivatives can be behaving completely different. Most students went down the path of calculating the equation of the chord then subtracting its integral from the integral of the function. Completely fine. The solution decided to use the fact that the area made by the chord is a triangle. Please remember to when comparing areas between two curves that you need to write the second function in BRACKETS  $-(-0.5x + 2)$  becomes  $0.5x - 2$ . As a habit I will always use brackets even if I have a single term.

**General comments:**

- Basic mathematical errors are costing you simple marks. This needs to be tightened up.
- Too many students forgetting the constant of integration.
- Don't assume that when  $t=0$  that the function is equal to zero, especially with trig functions.
- READ QUESTIONS CAREFULLY.
- Neatness of your writing is important. We know your writing as your teachers – WACE markers won't. All you need is two markers to see the same wrong value and you have lost marks.
- Structure your solutions better. Work downwards and from left to right in columns. Follow the structures learnt in class particularly for area under curve questions.
- If you need space don't cramp it- use the back supplementary pages.
- With "Show" questions always err on the side of caution and put more working than you think.