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EE/RPPF

For first assessment in 2018

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Candidate personal code:

Extended essay - Reflections on planning and progress form

Candidate: This form is to be completed by the candidate during the course and completion of their EE. This document records reflections on your planning and progress, and the nature of your discussions with your supervisor. You must undertake three formal reflection sessions with your supervisor: The first formal reflection session should focus on your initial ideas and how you plan to undertake your research; the interim reflection session is once a significant amount of your research has been completed, and the final session will be in the form of a viva voce once you have completed and handed in your EE. This document acts as a record in supporting the authenticity of your work. The three reflections combined must amount to no more than 500 words.

The completion of this form is a mandatory requirement of the EE for first assessment May 2018. It must be submitted together with the completed EE for assessment under Criterion E.

Supervisor: You must have three reflection sessions with each candidate, one early on in the process, an interim meeting and then the final viva voce. Other check-in sessions are permitted but do not need to be recorded on this sheet. After each reflection session candidates must record their reflections and as the supervisor you must sign and date this form.

First reflection session

Candidate comments:

In the first reflection session, I finalized my topic and decided a pathway to solve the problem I chose. The problem was about dividing two adjacent sides of a square into n equal parts, connecting the points accordingly and calculate the area underneath the lines. It comes from the Group Round questions from the 2017 UKMT Senior Maths Team Competition, which I was not able to solve completely. However, I find it very intriguing in terms of its connection with the area of a circle. In the meeting, I explained my intended solution of division and grouping of the individual triangles to my supervisor, which may result in large amount of calculation. While accepting my pathway, he suggested another way to work out the problem using integration. Therefore, I would like to keep both of the methods and compare the results in the end.

Date:

Supervisor initials:



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**Interim reflection**

Candidate comments:

While writing the first draft of my EE, I realised that the initial method of calculating the value of pi through working out the shaded area produces a huge error since the closest value of pi I can get is $10/3$ which has a percentage error of 6% to the accepted value of pi. Therefore, I turned to the other method of finding out the integral of the curve consisted by the outmost intersection points. Yet, I had difficulties looking for the correct function to model the graph. In the end, I managed to find the direct relationship between the X and Y coordinates despite the complicated expressions of both. The biggest challenge in writing the draft is that a tiny mistake in calculation could result in the redoing five pages' work. Thus, reflected upon that, I learnt to check over each step before going on the next one, which actually reduced the time on repetitive work significantly. In the extension part, I did not follow the restriction of having the length of each side to be 1 unit but instead enlarged it to suit my need. This way, the graph is more clear and the unnecessary complex calculation in decimals is avoided.

Date:

Supervisor initials

Final reflection - Viva voce

Candidate comments:

Although my hypothesis was proven wrong by the integral of the curve, my thinking on the research topic has developed to a great extent in the process of writing EE. When I got stuck in the standard geometric method, I tried to think outside the box and introduced the Cartesian coordinate system to the graph, which proven to be particularly effective to challenging questions. The skill of checking over every single step that I learnt will be useful in future researches as well. If I am going to start the EE all over again, I will improve the approach by changing my direction earlier when I realised it might not work out. That way, I would save a lot of time to work on the right path. In this process, I became aware that I am a learner who is persistent to work towards it because of the eager desire for the right answer.

Date:

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Supervisor comments:

The original idea for this EE came from the candidate herself. She is part of a very successful College Maths team. It is a measure of her work ethic and interest that when she came across a problem that she could not solve in a competition she went back to it and solved it to her own satisfaction. She then reflected that she could generalize this problem and also had the intellectual capacity to then solve this problem. She met challenges during the course of this essay and made good decisions to keep it on course. She had the insight to see value of considering the limiting continuous case of the discrete lines and to get agreement between the two approaches. She also showed initiative in describing the process as being similar to stitching on a card. I am very pleased indeed with the final piece of work and the effort and thought that went into it. She was always well in advance of any deadlines when progressing with the essay. She will have gained from doing this piece of work and reflecting on the process and the decisions that she had to take. It shows that she has the capacity to do Maths research at a University level. Her personal involvement and enthusiasm were high throughout the process and she gained enjoyment from the discovery of the Mathematical patterns that she found. I have nothing but praise for the manner in which she approached this essay, sat back and thought about it at stages in its development and commented on what she had learned from the whole experience.



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