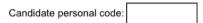
# EE/RPPF

For use from May/November 2018

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### 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. It must be submitted together with the completed EE for assessment under Criterion E. As per the 'Protocols for completing and submitting the Reflections on planning and progress form' section of the EE guide, a mark of 0 will be awarded by the examiner for criterion E if the RPPF is blank or the comments are written in a language other than that of the accompanying essay.

**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 indicate the month that the reflection session took place, the candidate's year of DP study at that time and initial this form.

### First reflection session

Candidate comments:

al
e





#### Interim reflection

Candidate comments:		
My research focus has shifted significantly. Initially, I intended	to explore various methods of solving the RLC D	E, but I found
the solution widely available in electrical engineering textbook	s, offering limited opportunity for personal insight.	. I redirected
towards a numerical methods EE where I focused on the RL o	circuit instead as it is modelled by a more accessi	ble first-order
DE. I originally planned to analyse Euler's, Heun's, and Runge	-Kutta 4 by comparing their local and global trun	cation error
(GTE) and convergence rates. However, I have decided to on	ly focus on Euler's as deriving each method, their	r respective
error bounds, and analysing them, would be impossible within		
to delve deeper into a concept that is only introduced at a surf	ace level in the IB syllabus and develop the insig	ht behind the
iterative process of a numerical methodsomething lost with high	gher-order methods. The main challenge thus far	has been
communicating the mathematics I use effectivelyit should be o	lear to the reader why certain theorems and lemr	mas are
introduced.		
		,
Month: December   ■ DP year (1 or 2):2	Supervisor initials:	

# Final reflection - Viva voce

Month: February

Candidate comments: believe that I have answered my RQ successfully, showing that Euler's method is accurate when the GTE can be computed. At the end of the EE, I was able to uncover the relationship between the Taylor series and Euler's method surprisingly as these two concepts seem distinct at face value. I was pleased to keep the Laplace transform; although the DE can be solved via integrating factors, I felt that adding the transform would show how a more sophisticated framework, can simplify the process of solving a DE. I am pleased to integrate technology through my EE, using Python to implement Euler's method and plot the output. The main skill I learned from the entire process was to read proofs and communicate mathematics effectively. By learning conventions used in mathematics journals and rearranging the order in which I introduce my theorems, I feel my mathematics is now more articulate and has a "narrative" woven through. As I plan on pursuing a STEM degree, mathematics will be integral to my degree and I am fortunate to foster this skill with my EE. With a larger word count, I would have compared different numerical methods as originally planned.

DP year (1 or 2):2

Supervisor initials:





#### Supervisor comments:

**Supervisor**: By submitting this candidate work for assessment, you are taking responsibility for its authenticity. No piece of candidate work should be uploaded/submitted to the e-Coursework system if its authenticity is in doubt or if contradictory comments are added to this form. If your text in the box below raises any doubt on the authenticity of the work, this component will not be assessed.

