



4tφ: A Supplement for Scholarship Calculus

4tφ is a unique resource to be used for teaching students of high mathematical calibre, as preparation for the Scholarship Calculus exam. It is the perfect base for a 2-year supplementary programme which will extend students' mathematical skills and thinking beyond NCEA Level 3. It can also be condensed and used for extension over the period of one year if desired.

There are four parts to the 4tφ package: write-on Student Workbooks at each of Year 12 and Year 13, containing notes, examples and exercises, along with 15 original Scholarship-style homework assignments in the Year 13 Workbook; a Teacher's Notes book, containing all the material in both Student Workbooks, plus more difficult material such as derivations, intended to be walked through with students on the board; and a Worked Answers book, which contains complete worked answers to all questions in the texts.

Pricing is competitive, at just \$25 for each Student Workbook (either level) and \$50 for each of the Teacher's Notes and Worked Answers books.

What sets 4tφ apart from the few other resources available at this level is that it is designed to be taught over an extended period of time, rather than given to students for individual use in 'cramming' close to the time of the exam. This resource will enable you to teach your students, not just test them, and the things they learn will not only give them an advantage in the Scholarship Calculus exam, but will also provide a firm foundation for pursuing mathematical studies at tertiary level.

Full information and a downloadable sample is available online at www.scholcalc.co.nz.

Notes

Sample part from one of 4tø's homework assignments

A candle has a cross-sectional shape of a regular octagon and tapers to a point, as shown below.

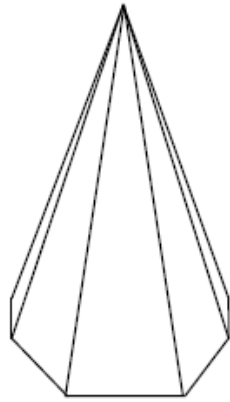


Fig 1: the tapered candle

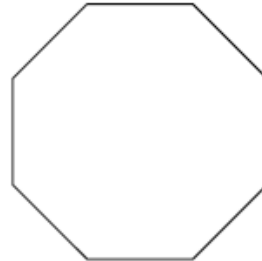


Fig 2: the candle's base

The candle burns (i.e. changes volume) at a rate which is inversely proportional to the exposed octagonal surface area of its top.

If the candle starts with $\frac{1}{10}$ of its volume already burnt down and it takes 9 hours for the candle to burn down completely from this starting point, when will the candle have burnt down to half its total volume?

(Assume the candle burns levelly and already-melted wax does not interfere.)