

Goals

MINI-LECTURES:
NOW RUNNING EVERY
WEDNESDAYS DURING
LUNCH TIME IN ROOM 23.
ALL WELCOME.

By the end of this week, you should be able to:

- Integrate various functions (by hand and by using ClassPad), BOTH INDEFINITE AND DEFINITE INTEGRALS
- Understand the use of areas of rectangles to approximate the area under a given curve between a defined interval
- Understand the use of sigma notation and limits to approximate area under a curve
- Relate the above to idea of finding an exact area under a given curve (or between curves) using definite integral

Theoretical components

1. Exact Area under the curve using Definite integral:
<http://www.youtube.com/watch?v=ODwkTt0RMDg&feature=relmfu>
AREA UNDER THE CURVE
<http://www.rootmath.org/calculus/area-intro>
FUNDAMENTAL THEOREM OF CALCULUS
<http://www.rootmath.org/calculus/first-fundamental-theorem-of-calculus>
PROPERTIES OF INTEGRATION
<http://www.rootmath.org/calculus/properties-of-integrals>
2. Study examples on AREA under the curve:
<http://www.intmath.com/applications-integration/2-area-under-curve.php>
3. Area between curves:
<http://www.intmath.com/applications-integration/3-area-between-curves.php>
4. Notes on Area under the curve:
http://www.teacherschoice.com.au/maths_library/calculus/area_under_a_curve.htm

(Focus on the notes/explanations and the examples, don't have to use Maths Helper Plus)

Practical components

Read the examples and the introduction to the following Exercises and do the following:

1. Do questions in Ex 9E in Yr 12 Methods Ebook (Q1 (a,d,g,j,m,p,s), Q2 (a,d,g,j,m,p), Q3, Q7-Q9).
2. Do questions in Ex 9F in Yr 12 Methods Ebook (Q3 (all-don't have to evaluate, just write an expression for finding the area for each), Q5(a,d,g), Q6).
3. Study the worked examples from Chapter 9H (on Areas between two curves). Make notes, you should copy the examples and watch the tutorials)

F
O
R
U
M

Next week.

Quiz

On cLc.

Investigation

Consider the curve $x(x^2 - 1)$

1. Integrate the function with respect to x
2. Calculate the Definite integral of this function between -1 and 1
ie $\int_{-1}^1 x(x^2 - 1) dx$
3. Explain what you find... any why the result may not be what you expected.
(hint try graphing on your classpad and splitting up areas...)