MATH 158 Assignment 1, Spring 2011

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Due Monday January 24th at 5:20 pm.

Review of Differentiation

Differentiate the following functions of x.

(a) $2 + x^{-3} + x^3$,

(b) xe^x,

(c) $\sqrt{1 - x^2}$,

(d) $(1 - e^{-x})/(1 + x^2)$,

(e) $\sin(2x + 3) - 2\cos(3x)$ and

(f) $\ln(2 - \cos x)$.

Section 8.1 Antiderivatives

Exercises 4, 16, 27, 28, 43, 44, 48, 62, 76, 77.
NB: integration rule 8 on page 435 is wrong! What should it be?
NB: skip integration rules $9-14$.

Section 8.2 Integration by Substitution

Exercises 2, 13, 14, 21, 22, 28, 80.
For exercise 80, you should get $N(5) = 6,857.9$. Show your working.
NB: the answer given in the book for exercise 13 is incorrect.
NB: skip integration rules $15-18$ as we will not use those either.

Section 8.3 Area and the Definite Integral

Exercise 10. Calculate also $\int_0^1 x^3 dx$ to determine the exact area.

Section 8.4 The Fundamental Theorem of Calculus

Exercises 7, 8, 14, 22, 34, 36.

Section 8.5 Evaluatating Definite Integrals

Exercises 1, 2, 61, 62, 68, 71, 78.
For exercise 78, you need to integrate once to determine the rate of production (in billions of tons/year) then once more to determine the total production (in tons). You should get 1075.6 tons.