MATH 158 Assignment 3, Spring 2011

Michael Monagan
Due Monday February 28th at 5:20 pm.

Section 9.1 Integration by Parts and Section 9.5 Improper integrals

An oil field been producing oil at a rate $R(t)$ million barrels of oil per year since 2001. Suppose $R(t) = te^{-t/5}$ where $t = 0$ corresponds to 2001.

(a) In which year did the oil well reach a maximum production rate?

(b) Sketch the graph of $R(t)$ for $0 \leq t \leq 20$.

(c) How much oil has it produced so far?

(d) If it is left to produce oil indefinitely, how much more oil will it produce?

Section 10.1 Functions of Several Variables

Exercises 6, 9, 24, 26, 31.

Section 10.2 Partial Derivatiaves

Exercises 1, 2, 5, 6, 10, 26, 35, 50, 63, 64, 66.

For question 63, it should read $V = \frac{30.9T}{P}$.

Section 10.3 Maxima and Minima

Exercises 4, 10, 27, 28, 40.

Section 10.4 Least Squares

Exercises 2, 14.