

21-121 Calculus 1 (IM/Econ)

## Assignment 13

Solutions to *all* the following problems should be written up and hand in to your TA.

Due in recitation on Thursday, December 6, 2001

Section 6.1: Problems 18, 44

Section 6.2: Problems 4, 10, 30

Section 6.3: Problems 4, 12, 20

Supplementary Problems\*:

1. The demand equation for a product is

$$q = 400 - p^2,$$

and the supply equation is

$$p = \frac{q}{60} + 5.$$

Find the producers' surplus and the consumers' surplus under market equilibrium.

2. The demand equation for a product is

$$(p + 20)(q + 10) = 800,$$

and the supply equation is

$$q - 2p + 30 = 0.$$

- (a) Verify, by substitution, that market equilibrium occurs when  $p = 20$  and  $q = 10$ .
- (b) Determine the consumers' surplus under market equilibrium.

\*Problems taken from *Introductory Mathematical Analysis for Business, Economics, and Life Sciences*, ERNEST F. HAEUSSLER, JR. & RICHARDS S. PAUL (Eighth Edition)