MGEC02 - TOPIC 5 - Homework

5.1 a negative externality

Stelco's marginal cost of pollution abatement is MSC = 2 - 2Q + Q^2 and the marginal benefit of pollution abatement for the citizens of Hamilton is MSB = 1507 – 10Q where Q is the pollution reduction in percent from current levels.

(a) What is the optimal level of pollution abatement?

(b) What is the cost to the firm of achieving this optimal level of abatement?

(c) What fee would ensure the optimal level of pollution abatement?

5.2 a common resource

Residents fish in Lake Baptiste near Bancroft, Ontario to earn some income. The lakeshore is private but the lake itself is common property. The catch depends on the number of boats (B) on the lake. During the 20-week fishing season the average productivity of each boat APB is 300 – 20B fish per week and the marginal productivity of each boat MPB is 300 – 40B fish per week. The marginal opportunity cost MC of any boat going on the lake for a week is 100 fish.

(a) Solve for the optimal number of boats.

(b) Solve for the actual number of boats.