

Section 4.6: Optimization Problems

These notes reflect material from our text, *Calculus, Concepts and Contexts, Third Edition*, by James Stewart, published by Brooks/Cole, Pacific Grove, CA, 2005.

Key points from Stewart, Section 4.6: Optimization Problems.

Concepts

Basic steps in solving optimization problems:

- (1) Draw a sketch representing the problem.
- (2) Invent appropriate notation and label the important elements in the sketch.
- (3) Identify the variable to be maximized or minimized and express it in terms of the other variables present in the problem.
- (4) If the variable to be maximized is expressed in terms of more than one variable, then use other relationships present in the problem to reduce it to a function of a single variable.
- (5) Use the methods of the previous sections to find the desired absolute maximum or absolute minimum.

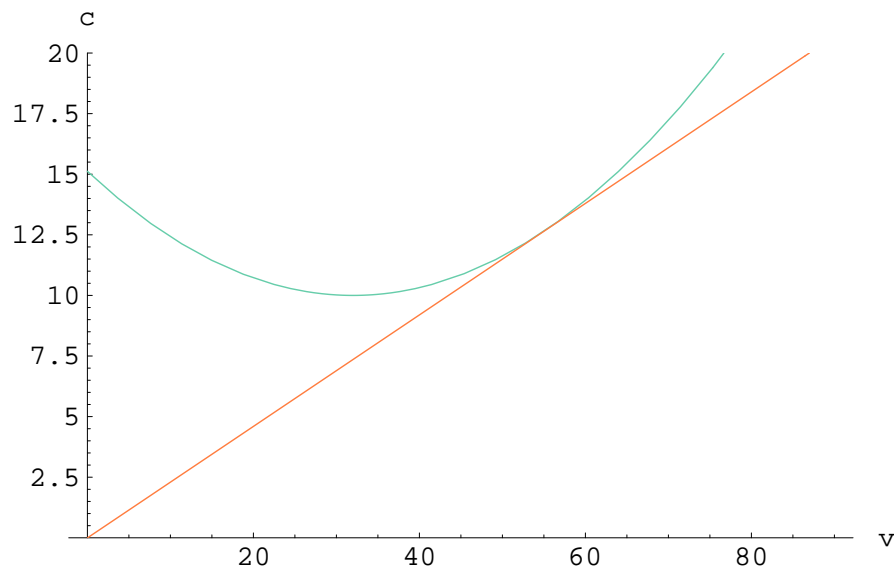


Fig. (Stewart 4.6.23) Optimal fuel consumption.

Exercises

Exercises for Section 4.6, pp 311–315: 3, 5, 7 (fence), 8 (box), 16 (rectangle), 28 (swimming fish), 29 (beehive), 30 (boat), 32 (lake)