Example

A company selling Foxtrot fireplaces finds that the cost per fireplace decreases linearly with the number of monthly sales. When no fireplaces are sold, the cost per fireplace is \$1000. When 1000 fireplaces are sold, the cost per fireplace is \$700.

The company knows that the revenue for selling x fireplaces is

$$R(x) = \frac{1}{1000}x^3 - \frac{12}{10}x^2 + 1150x.$$

Determine the sales level(s) that give an increasing profit.

Examples

For each of the following functions, find the x-values of any relative extrema.

(a) $f(x) = x^3 + 3x^2 - 24x + 2$

(b) $f(x) = 3x^{5/3} - 15x^{2/3}$

(c) $f(x) = 3xe^x + 2$