

Problem Definition

Problem 63. **Cost** Find the cost function for the given marginal cost and specified fixed cost.

$$\frac{dC}{dx} = 85$$

At $x = 0$ the fixed cost is $C(0) = \$5500$.

Solution Step 1:

To find the cost function $C(x)$ we will need to compute the indefinite integral of the marginal cost function $dC/dx = C'(x)$ given in the problem. The indefinite integral is

$$\int \frac{dC}{dx} dx = \int 85 dx = 85x + B$$

where B is the constant of integration.

Solution Step 2:

We have an additional condition that we need to check and possibly use in the definition of the cost function. We know that at $x = 0$, $C(0) = 5500$. This would represent fixed costs for producing the item. This means

$$C(0) = 85(0) + B = 5500$$

So, this means that $B = 5500$ and the model of cost is

$$C(x) = 85x + 5500$$