

Exercise 64

A cell phone plan has a basic charge of \$35 a month. The plan includes 400 free minutes and charges 10 cents for each additional minute of usage. Write the monthly cost C as a function of the number x of minutes used and graph C as a function of x for $0 \leq x \leq 600$.

Solution

It's important to emphasize that 10 cents are charged for each additional minute of usage, so a step function, notably the floor function, is needed to model this.

$$C(x) = \begin{cases} 35 & \text{if } 0 \leq x \leq 400 \\ 35 + 0.1 \text{ floor}(x - 400) & \text{if } 400 \leq x \leq 600 \end{cases}$$

