

Exercise 92

A store offers customers a 30% discount on the price x of selected items. Then, the store takes off an additional 15% at the cash register. Write a price function $P(x)$ that computes the final price of the item in terms of the original price x . (Hint: Use function composition to find your answer.)

Solution

After the first discount, the price is

$$\begin{aligned}F(x) &= x - 0.3x \\ &= 0.7x.\end{aligned}$$

Then, for the second discount, the store takes off an additional 15%.

$$\begin{aligned}P(F(x)) &= F(x) - 0.15F(x) \\ &= 0.85F(x) \\ &= 0.85(0.7)x \\ &= 0.595x\end{aligned}$$

Therefore, the price function is $P(x) = 0.595x$.