

Answer on Question #55194 – Math – Calculus

The International Silver Strings Submarine Band holds a bake sale each year to fund their trip to the National Sasquatch Convention. It has been determined that the cost in dollars of baking x cookies is

$$C(x) = 0.5x + 16$$

and that the demand function for their cookies is

$$p = 14 - 0.05x.$$

How many cookies should they bake in order to maximize their profit?

Solution

If $C(x) = 0.5x + 16$ and the demand function for their cookies is $p = 14 - 0.05x$, then they should bake such amount of cookies in order to maximize their profit, for which $MR = MC$.

$$MC = C' = 0.5$$

$$MR = TR' = (p \cdot x)' = ((14 - 0.05x) \cdot x)' = 14 - 0.1x$$

$$14 - 0.1x = 0.5$$

$$x = 135 \text{ (units)}.$$