Optimization in Business

The total revenue is given as:

$$R(x) = -2x^2 + 68x - 128$$

At what level of sales is the average revenue per unit equal to the marginal revenue?

Solution: Ave. R. = Marginal R.

$$\frac{R(x)}{x} = R'(x)$$

$$\frac{-2x^2+68x-128}{x} = -4x+68$$

$$-2x+68-\frac{128}{x} = -4x+68$$

$$-\frac{128}{x} = \frac{-2x}{1} \Rightarrow x^2 = 64 \Rightarrow \boxed{x=8}$$

Hint: No need to verify max. P if MR=MC used