If $\hat{\beta}_0$ and $\hat{\beta}_1$ are the least-squares estimates for the intercept and the slope in a simple linear regression model, show that the least-squares equation $\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x$ always goes through the point $(\bar{x}, \bar{y})$.

Hint: substitute $\bar{x}$ for x in the least-squares equation and use the fact that $\hat{\beta}_0 = \bar{y} - \hat{\beta}_1\bar{x}$

Using the hint!

$$\hat{y}(\bar{x}) = \hat{\beta}_0 + \hat{\beta}_1 \bar{x}$$

$$= \bar{y} - \hat{\beta}_1 \bar{x} + \hat{\beta}_1 \bar{x} = \bar{y}$$