

# STAT 602 Modern Applied Statistics

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## 1 Question 1 (3.7.5 pg 121)

Consider the fitted values that result from performing linear regression without an intercept. In this setting, the  $i$ th fitted value takes the form

$$\hat{y}_i = x_i \hat{\beta}, \quad (1)$$

where

$$\hat{\beta} = \left( \sum_{i=1}^n x_i y_i \right) / \left( \sum_{i'=1}^n x_{i'}^2 \right). \quad (2)$$

show that we can write

$$\hat{y}_i = \sum_{i'=1}^n a_{i'} y_{i'} \quad (3)$$

What is  $a_{i'}$  ?

*Note: We interpret this result by saying that the fitted values from linear regression are linear combinations of the response values.*

### 1.1 Solution to Question 1

## 2 Question 2 (3.7.10 pg 123)

### 2.1 Solution to Question 2

## 3 Question 3 (3.7.15 pg 126)

### 3.1 Solution to Question 3