STAT 408: Homework 2:

1. a.) What is the fitted value of the response variable corresponding to $X = 7$?

↳ $y = 10 + 0.56 \cdot 7 = \boxed{13.92}$ ← fitted value of response variable

b.) What is the residual corresponding to the data point with $x = 7$ & $y = 17$

↳ Substitute $y = 10 + 0.56(7) \rightarrow 17 = 10 + 0.56(7)$

↳ $17 - 13.92 = \boxed{3.08}$

c.) If the number of training hours is increased by 1, how is the expected test score affected?

↳ If you increase the training hours by 1, it is expected for the test score to increase by 0.56 units. "y" represents the expected test score, the coefficient is "x" which is 0.56. For every one-unit increase in hours, the expected test score increases by 0.56

d.) The actual test score will not be 17. The regression equation does not provide us actual values. It provides us with a predicted value of Y. Y can be more than 17 or less than 17. The additional data will affect the regression line as the coefficients are functions of the actual values.