Section 11/16

1 Question 11.6

Let (X, Y) be a random pair and let $\hat{Y}$ be the least squares linear predictor of Y based on X. Assume $r(X, Y) \neq 0$.

Find $r(X, \hat{Y})$.

2 Question 11.7

Let (X, Y) be a random pair and let $r = r(X, Y)$. Let X^* be X in standard units and let Y^* be Y in standard units.

a) Find $r(X^*, Y^*)$.

b) Write the equation for Y^*, the least squares linear predictor of Y^* based on X^*.

3 Question 11.11

Let X have the uniform distribution on the three points -1, 0, and 1. Let $Y = X^2$.

a) Show that X and Y are uncorrelated.

b) Are X and Y independent?