

DATA130004: Homework 1

Due in class on October 12, 2017

1. Suppose that X and Y are continuous random variables with density f and g respectively, and a and b are constants. Prove the following arguments
 - (a) $E(aX + b) = aE(X) + b$.
 - (b) $E(X + Y) = E(X) + E(Y)$.
 - (c) If X and Y are independent, then $E(XY) = E(X)E(Y)$.
 - (d) $Var(b) = 0$.
 - (e) $Var(aX + b) = a^2Var(X)$.
 - (f) $Var(X + Y) = Var(X) + Var(Y) + 2Cov(X, Y)$.
 - (g) If X and Y are independent, then $Var(X + Y) = Var(X) + Var(Y)$.
2. Rizzo book Exercises 3 (starting from Page 94): 3, 5.