

ECE 139
SPRING 2005
FRIDAY 10A-12P DISCUSSION
QUIZ #7 REVIEW
20 MAY 2005

NAME:

1. Derive the equation $\text{VAR}[X] = E[X^2] - (E[X])^2$
2. X and Y are RV's with $E[X]=m_X$ and $E[Y]=m_Y$. Let $Z = 2X+Y$. What is $E[Z]$? Show your work.
3. Evaluate the following integrals:

a. $\int_{-\infty}^{\infty} x dx$

b. $\int_{-1}^1 x^2 dx$

c. $\int_{-a}^a \sin(x) dx$

d. $\int_{-a}^a x^n dx$ where n is odd

4. $X \sim \text{UNIFORM}(0,1)$. Let $Y = X^2$.

- a. What is $f_X(x)$?
- b. What is $E[X]$? $E[Y]$? $\text{VAR}[X]$? $\text{VAR}[Y]$?
- c. What is $f_Y(y)$?
- d. What is $F_Y(y)$?
- e. What is $F_X(x)$?

5. X and Y have a joint pdf $f_{XY}(x,y)$.

- a. What is $F_{XY}(x,y)$?
- b. What is $F_X(x)$? $F_Y(y)$?
- c. What is $E[X]$? (If you use $f_X(x)$, tell me where you got it)