

ECE 5510 Fall 2009: Homework 3

Due: at 5pm in the homework locker, Thursday, September 17

1. Y&G 2.5.9
2. Y&G 2.6.2
3. Y&G 3.2.4
4. The CDF of a continuous r.v. V is

$$F_V(v) = \begin{cases} 0, & v < -5 \\ \frac{(v+5)^2}{144}, & -5 \leq v < 7 \\ 1, & v \geq 7 \end{cases}$$

- (a) What is $P[0 \leq V \leq 10]$?
 - (b) What is $E[V]$?
5. For a Gaussian r.v. X with $\mu = 5$ and $\sigma = 3$, what is $P[0 \leq X \leq 9]$? Write your answer in terms of the $\Phi(\cdot)$ function. Then, use Matlab to compute a numerical answer. In Matlab, write a function called `Phi.m`, with the following code:

```
function val = Phi(x)
val = 1/2 + 1/2 .* erf(x./sqrt(2));
```