14.381 Problem Set 5
Statistics Fall, 2004

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Due October 18, 6:00pm (in E52-204).

1. C&B 4.20
2. Let X be a random variable with conditional distribution $X|\theta \sim N(\theta, \theta^2)$, where $\theta \sim U(0,1)$.
   (a) Compute EX, $\text{Var}(X)$ and $\text{Cov}(\theta, X)$.
   (b) Show that $\frac{X}{\theta}$ and θ are independent and derive the distribution of $\frac{X}{\theta}$.
3. C&B 4.27
4. C&B 4.31
5. C&B 4.42
6. C&b 4.46