TO FINISH BEFORE FINAL

TABLE 1. Key homework problems to review in recitation

Exam	Problem	Answer
S06	18	D
S05	15	C
S04	16	E
S03	10	A
S03 Mkp	9	D
S03 Alt	14	C
Sample 3	16	c
Sample 4	16	h

You should know how to do problems from the 4 midterms.
Topics covered on the test:

(1) Calculus of 2 variables
   (a) Partial derivatives of functions of 2 variables
   (b) Implicit differentiation of functions of 2 variables
   (c) Critical points
      (i) Local (Saddle, Max and Min)
      (ii) Given a constraint (Lagrange multipliers)
   (d) Double integrals, Change of order of differentiation
   (e) Integration by substitution
(2) Discrete probability distributions
   (a) Counting methods: listing, multiplication, permutations, combinations
   (b) Expected value and variance definitions and properties
   (c) Binomial distribution (expected value and variance)
   (d) Poisson distribution (expected value and variance)
   (e) Independance
   (f) Conditional and the use of Bayes' Theorem
(3) Continuous probability distributions
   (a) Define p.d.f. (the integral over the entire space is 1)
   (b) Calculate probability by integration
   (c) Expected value and variance
   (d) Conditional
   (e) Bivariate
   (f) Special distributions-find p.d.f., expected value and variance

(i) Uniform :

$$\text{p.d.f. : } \frac{1}{b-a} \tag{1}$$

$$E(X) := \frac{b+a}{2} \tag{2}$$

$$V(X) := \frac{(b-a)^2}{2} \tag{3}$$

(ii) Exponential :

$$\text{p.d.f. : } \frac{1}{m}e^{t/m} \tag{4}$$

$$E(X) := m \tag{5}$$

$$V(X) := m^2 \tag{6}$$

where m is the mean waiting time

(iii) Normal
  (A) Find mean and standard deviation
  (B) Convert to Z
  (C) Use ϕ chart

(4) Linear algebra
  (a) Row reduction
  (b) Matrix inverses
  (c) Matrix multiplication and addition
  (d) Use augmented matrices to find solution to a system of linear equations
  (e) Use matrix inverse to find solution to a system of linear equations
  (f) Determine the number of solutions to a system using row reduction or shortcuts (matrix properties)
  (g) Determine if a matrix is invertible using row reduction or shortcuts (matrix properties)
  (h) Markov chains (probability matrices)