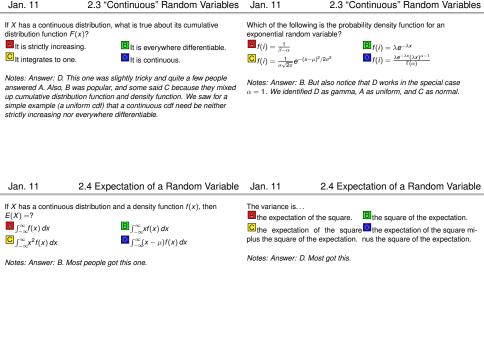
Jan. 11	Reading for next class	Jan. 11	2.1 Random Variables
in the Ross book.  Continue into Section 3.4	erstand Sections 2.8 and 3.1 through 3.3 as far as you can (it's 15 pages long).  should be Sections 2.9 and 3.1 through	shown, what is $P(X = 4)$ ? $\frac{1}{3}$ $\frac{1}{6}$	nd you let $X$ equal the total number of dots $ \frac{1}{4} \frac{1}{4} = \frac{1}{12} $ ne class obtained this answer. In response a reasoning.
Jan. 11	2.2 Discrete Random Variables	Jan. 11	2.2 Discrete Random Variables
binomial random variable geometric random variable	a special case of which of the following?  Exponential random variable Poisson random variable terminology, and there were several who	random variable? $\rho(i) = \rho(1 - \rho)^{i}$ $\rho(i) = \frac{\lambda^{i}}{i!}e^{-\lambda}$	probability mass function for a Poisson



Jan. 11	2.5 Jointly Distributed Random Variables	Jan. 11 2.5 Jointly Distribu	ted Random Variables
Var(X + Y) $E(X + Y)$ Notes: Answer: A	way to write $\operatorname{Var}(X) + \operatorname{Var}(Y) + 2\operatorname{Cov}(X, Y)$ ? $\operatorname{Corr}(X, Y)$ $\operatorname{E}(X + Y)^2$ a. A few weren't sure of this. We didn't spend any time ble to derive this formula without too much difficulty.	If $X_1,\ldots,X_n$ are independent and identically variance $\sigma^2$ , $\operatorname{Var}\overline{X}_n=?$ $\sigma$ $\sigma$ $\sigma(\sigma/n)^2$ $\sigma^2/n$ Notes: Answer: D. This is an important one: the proof of the weak law of large numbers later.	For instance, it comes up in
Jan. 11	2.6 Moment Generating Functions	Jan. 11	2.7 Limit Theorems
the MGF of a bind $ (1 - p + pe^t)^n $ $ (1 - np + npe^t)^n $	)	The inequality $P( X - \mu  \ge k) \le (\sigma/k)^2$ may the following?  The Strong Law of Large Numbers  The Central Limit Theorem  The Central Limit Theorem  The Strong Law of Large Numbers  The Strong Law of L	Weak Law of Large Num- pyshev's Inequality

Jan. 11

2.7 Limit Theorems

If  $X \sim \text{binomial}(100, 1/2)$  and  $\Phi(\cdot)$  is the standard normal cdf, which of the following is the best approximation to  $P(X \le 50)$ ?  $\Phi(0)$   $\Phi(0.1)$ Notes: Answer: B. I discussed the continuity correction as it applies here: this continuity correction gives a far more accurate approximation.

Notes. Answer: It discusses in a continuity correction are accurate approximation than the more naive choice A. (The true value is 0.53979,  $\Phi(0) = 0.5$ , and  $\Phi(0.1) = 0.53983$ .)