DLet A and B be events such that $P(A) = \frac{7}{10}$ $P(B) = \frac{3}{10}$, and $P(B|A) = \frac{2}{7}$. Find P(A|B), P(AnB), P(AuB), P(Ãn B). Draw a Venn Diagram representing this stimetion, and label it.

(2)Suppose X is a random variable with density $f(x) = \begin{cases} c/x & x \ge 1 \\ 0 & \text{otherwise}. \end{cases}$ a) Determine C. b) Determine E(X) c) Find the CDF F(x).

d) Evaluate / im x (1-FG)

(3) Suppose X is a random Variable with density $f(x) = \begin{cases} C/x^2 & x \ge 1 \\ 0 & \text{otherwise} \end{cases}$

a) Determine C.

b) Compute E(X).

c) Compute V(X)

(4) Let X be a continuous random variable on [-1,1], with E(X) = 0 and V(X) = 1/4. Compute $\int \chi F(x) dx$

where F(x) is the CDF of X.

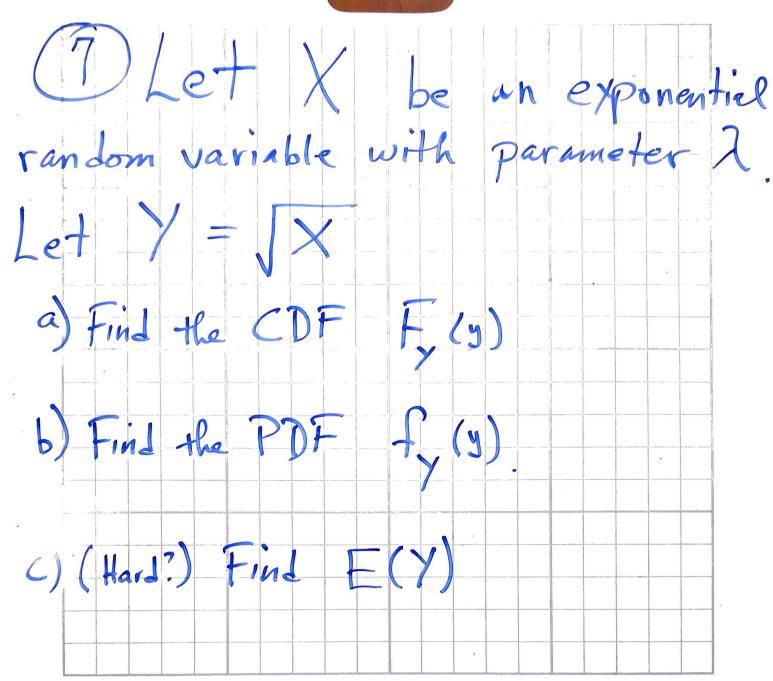
independent? 2) Let R = X2+ Y2 Compute P(R = 1)

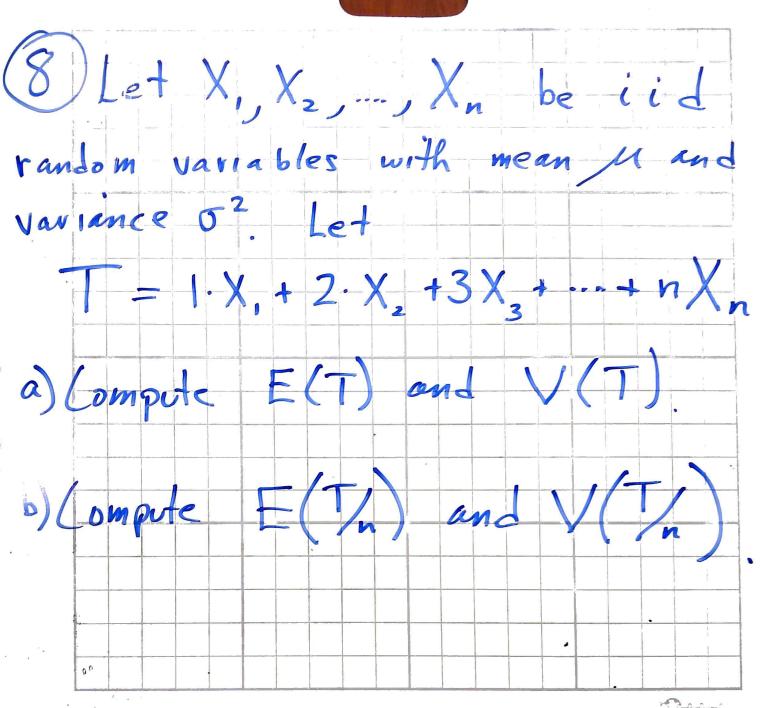
a random (uniformly random) point in the unit disk
$$\{(x,y) \mid x^2 + y^2 \le 1\}$$
 (1) Give a formula for the conditional PDF $f(x \mid Y = \frac{1}{2})$. Are X and Y

(5) Lc. 1 + = (X Y) be

(3) Find a CDF and PDF for K.

Let X be the number of wireless access points (WAPs) on campus that fail in a given month. Assuming the WAPs are independent. X can be modeled by a oisson random variable. It is known that, on average, 2 WAPs fail each mouth. a) Find P(X=4), using the Poisson distub. Suppose Hore are 50 WAPs on campus. Use the binomial distribution to calculate P(X=4). c) Repert (b) sift = 200.





Let XIX2, ... Xn be a random sample from a distribution with 4=20 and 52=16. Use Chebyshev's inequality to determine how large n needs to be guarantee that $P(|X-20| \leq 1$

(10) Let X, X2, ..., Xn be a random sample from a distribution with M=20 and $\sigma^2=16$ Apply the CLT (ie, normal approximation) to determine n so that $P(|x-20| \le 1) = 0.95$

GRAPHBOARD TABLET