

Name: _____

MA 5230 Test 2

1. Let $f(x) = c(x^2 + 1)$ where $0 \leq x \leq 2$.
 - (a) Find c .
 - (b) Find $P(1 < X < 2)$.
 - (c) Compute $VAR(X)$ and μ .

2. Two problems:
 - (a) Assume number of customers to a bank is Poisson with 3 customers per hour average. Compute the probability that we have at least 3 customers in one hour.
 - (b) Let a test score be normal with $\mu = 75$ and $\sigma = 15$. If the top 10% get an A what is the minimum score for an A.

3. Let $f(x) = ce^{-2x}$ for $x > 0$ be the pdf for X , where X represents the lifespan of a light bulb in years.
 - (a) find c
 - (b) compute the that a given light bulb will last more than 1 year
 - (c) We have five such light bulbs in a room. Compute the probability that at least 3 will be working in one year

4. Let the following table represent a joint pdf.

		Y		
		1	2	3
x	1	0.2	0.2	0.1
	3	0.3	0	0.2

 - (a) compute $E(XY)$
 - (b) Compute the marginal pdf for x
 - (c) Compute $\rho_{X,Y}$

5. Let $f(x, y) = \frac{1}{3}(x + y)$ where $0 < x < 1$ and $0 < y < 2$
 - (a) compute $E(XY)$
 - (b) Compute the marginal pdf for x
 - (c) Compute $E(X)$