

MATH 4581 PRACTICE PROBLEMS FOR QUIZ 1

1). X and Y are independent random variables. The mgf for X is $(1 - 2t)^{-5/2}$ and the mgf for Y is e^{2t+3t^2} . Find the mgf for $2X - Y + 4$.

2). The mgf for X is $(1 - 2t)^{-1/2}$. State the largest set of values of t for which the mgf is well-defined. Use the mgf to compute the mean and standard deviation of X .

3). The continuous random variable X is uniformly distributed on the interval $[2, 3]$. Compute the mgf of X .

4). Let X be a chi-square random variable with 11 degrees of freedom. Find z so that

$$P(X \leq z) = 0.99$$

5) Let X be a chi-square random variable with n degrees of freedom, where $n \geq 1$ is an integer. Find the smallest value of n so that

$$P(X \leq 15) \leq 0.9$$

6). A sample of 100 measurements is made from a distribution whose pdf is believed to be

$$f(x) = 2x \quad 0 \leq x \leq 1$$

Use goodness of fit to test at the 5% level if the following binned data supports this model:

Outcome	$0 - 0.25$	$0.25 - 0.5$	$0.5 - 0.75$	$0.75 - 1.0$
Observed Frequency	8	29	25	38