

**MATH20802: STATISTICAL METHODS**  
**SEMESTER 2**  
**QUIZZ PROBLEM 3**  
**(Deadline: Wednesday 21 February 2018, 12:00noon)**

Suppose  $X$  is a random variable with probability density function

$$f(x) = \frac{1}{\sqrt{2\pi}\sigma x} \exp\left[-\frac{(\log x - \mu)^2}{2\sigma^2}\right]$$

for  $x > 0$ ,  $-\infty < \mu < +\infty$  and  $\sigma > 0$ . Find  $E(X^n)$ .

**This problem is worth 1 mark. Marking scheme: 1 mark if the answer is correct, and the derivation is correct and detailed enough; 0.5 mark if the answer is correct, and the derivation is incorrect or not detailed enough; 0.5 mark if the answer is incorrect or not given, but the derivation is correct and detailed enough; 0 mark if the answer is correct, but the derivation is not detailed enough; 0 mark if the answer is incorrect, and the derivation is not detailed enough.**

**You can give your written solution to me during any of the lectures or example classes. You can also bring your solution to ATB2.223, place it under the door if I am not in. Email submissions or late submissions will not be accepted. I will mark your solutions and email your mark to you within 24 hours of the deadline. PLEASE DO NOT FORGET TO WRITE YOUR FULL NAME AND ID.**