Problem Set 8

MATH 16B Spring 2016

21 April 2015

Exercise. Decide whether the following sums converge or diverge.

(a)
$$\sum_{n=1}^{\infty} \frac{1}{n^3+n+1}$$

(b)
$$\sum_{n=2}^{\infty} \frac{1}{n^2 \ln(n)}$$

Exercise. Compute the Taylor series of the following functions at $x = 0$. You may use the Taylor series $e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!}$ and $\frac{1}{1-x} = \sum_{n=0}^{\infty} x^n$. (Hint: you may have to take a derivative for one of these).

(a)
$$xe^{x^2}$$

(b)
$$\frac{1}{(1+x)^2}$$

Exercise. Find the expected value, variance and standard deviation of the following discrete random variable.

Outcome	1	2	3
Probability	$\frac{4}{9}$	$\frac{4}{9}$	$\frac{1}{9}$