

MAT 215: PROBLEM SET 11

NOT GRADED

Problem 1: If $p \in \mathbb{R}$, $-1 < x < 1$,

(i) Prove that

$$(1+x)^p = 1 + \sum_{n=1}^{\infty} \frac{p(p-1)\cdots(p-n+1)}{n!} x^n.$$

(ii) Prove that for $p > 0$,

$$(1-x)^{-p} = \sum_{n=0}^{\infty} \frac{\Gamma(n+p)}{n!\Gamma(p)} x^n.$$

Abbot exercises: 8.4.13, 8.4.14, 8.4.22