

Fall 2021, Math 596: Week 3 Preliminary Problems
Due: Thursday, September 9th, 2021
Generating Functions - Deep Cuts

Preliminary problems. These problems should be completed before discussion on Thursday.

(P1) Use the fact that

$$\sum_{n \geq 0} n^2 z^n = \frac{z + z^2}{(1 - z)^3}$$

and formal differentiation to verify that

$$\sum_{n \geq 0} n^3 z^n = \frac{z + 4z^2 + z^3}{(1 - z)^4}.$$