

Fall 2019, Math 579: Preliminary Problem Set 10
Due: Thursday, November 14th, 2019
Operations on Power Series

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

(P1) Perform the following derivative (yes, this question only uses Calculus).

$$\frac{d}{dz} \left(\frac{e^{4z} - 1}{1 - z^2} \right) =$$

(P2) Let

$$A(z) = \sum_{n=0}^{\infty} a_n z^n \quad \text{and} \quad B(z) = \sum_{n=0}^{\infty} b_n z^n.$$

If $B(z) = A(z)/(1 - z)$, find a formula for b_n in terms of a_n . Hint: write

$$\frac{1}{1 - z} = \sum_{n=0}^{\infty} z^n$$

and perform power series multiplication.