

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 1.8

Math 2000 Worksheet

WINTER 2020

For practice only. Not to be submitted.

1. Find the radius of convergence and the interval of convergence for each of the following power series.

(a)
$$\sum_{i=0}^{\infty} \frac{x^i}{2i+1}$$

(b)
$$\sum_{i=1}^{\infty} \left(\frac{x}{i}\right)^i$$

(c)
$$\sum_{i=1}^{\infty} \frac{(x-4)^i}{3i(i+1)}$$

(d)
$$\sum_{i=0}^{\infty} \frac{i}{(i^2+1)4^i} (x+7)^i$$

(e)
$$\sum_{i=2}^{\infty} \ln(i)x^i$$

(f)
$$\sum_{i=0}^{\infty} \frac{(-1)^i(2i)!}{i!} (x-12)^i$$

(g)
$$\sum_{i=1}^{\infty} \frac{2 \cdot 4 \cdot 6 \cdots (2i)}{1 \cdot 3 \cdot 5 \cdots (2i-1)} (5x-1)^i$$

(h)
$$\sum_{i=0}^{\infty} \frac{5^{2i+1}}{9^i} (x-3)^{2i}$$