

# Power Series Worksheet

April 10, 2013

1. Find the interval of convergence for the following series:

(a) 
$$\sum_{n=0}^{\infty} \frac{(-1)^n (x-3)^n}{6^n}.$$

(b) 
$$\sum_{n=1}^{\infty} \frac{x^{2n+1}}{n!}.$$

(c) 
$$1 + \frac{x^2}{4} + \frac{x^4}{16} + \frac{x^6}{36} + \dots$$

2. Suppose that the power series  $\sum_{n=0}^{\infty} C_n x^n$  converges when  $x = -4$  and diverges when  $x = 7$ . Determine whether the following statements are true, false or impossible to determine and explain why:

(a) The power series converges when  $x = 10$ .

(b) The power series converges when  $x = 3$ .

(c) The power series diverges when  $x = 1$ .

(d) The power series diverges when  $x = 6$ .