

MA306 -Rickert - Homework for Monday January 20,2003

**1** Let  $a_n = 3^n/n!$ . Prove or disprove that  $\sum_{n=1}^{\infty} a_n$  converges.

**2** Let  $a_n(x) = (-x)^n/2^n$ . Find all values of  $x$  so that  $\sum_{n=1}^{\infty} a_n(x)$  converges. Prove all assertions of convergence or divergence.

**3** Let  $a_1 = \sqrt{2}$ ,  $a_2 = \sqrt{2}^{\sqrt{2}}$ ,  $a_3 = \sqrt{2}^{\sqrt{2}^{\sqrt{2}}}$ ,  $a_4 = \sqrt{2}^{\sqrt{2}^{\sqrt{2}^{\sqrt{2}}}}$ . Prove that  $\lim a_n$  exists and determine (with proof) the value of the limit.

Exercise 2.7.13.

Exercise 3.2.1

Exercise 3.2.2

Exercise 3.2.3

Exercise 3.2.5

Exercise 3.2.13

Exercise 3.3.1