University of Toronto at Scarborough
Department of Computer & Mathematical Sciences

TEST 2

MATC34H – Complex Variables

Examiner: J. Friedlander $\qquad$ Date: November 18, 2008

1. [**6 marks**] State each of the following

   (a) Cauchy's theorem

   (b) Cauchy's integral formula

2. [**7 marks**] Suppose that f is an entire function and $Re\ f(z) \leq c$ for some constant c and all z. Show that f is constant.

3. [**7 marks**] Find the first four non–zero terms in the Laurent expansion about $z_0 = 0$ for the function

$$f(z) = \frac{1}{e^z - 1}.$$