**MATH 1073 Calculus I**

**Assignment 3**

1. How would you “remove the discontinuity” of *f* ? In other words, how would you define *f* (2) in order to make *f* continuous at 2?

Ans:



2. Locate the discontinuities of the function and explain.

Ans:



3. Use continuity to evaluate the limit.

Ans:

Because is a continuous function, we can apply Theorem 8:

4. For what value of the constant c is the function *f* continuous on ?



Ans:





5. Let *f*(*x*)= 1/*x* and .

(a) Find .

(b) Is continuous everywhere? Explain.

Ans:



6. Use the Intermediate Value Theorem to show that there is a root of the equation in the interval (1, 2).

Ans:



7- 10 Find the limit or show that it does not exist.

11. After an injection, the concentration of a drug in a muscle varies according to a function of time *f* (*t*). Suppose that *t* is measured in hours and *f* (*t*) = e−0.02t − e−0.42t. Find the limit of *f* (*t*) both as *t* → 0 and *t* →∞, and interpret both limits in terms of the concentration of the drug.

Ans:

*f* (*t*) → 0 as *t* → 0 and *t* → ∞. This makes sense because the drug will require

some time to reach the muscles, and should wear off over time.