**MATH 1073 Calculus I**

**Assignment 6**

(Due: 31st, Oct, 2019)

1. Find the linear approximation to f(x) = cos x at x= and use it to approximate cos(1).

2. Find the quadratic approximation to f(x) = cos x at x= and use it to approximate cos(1).

3. If *a* and *b* are positive numbers, find the maximum value of

4. An object with weight *W* is dragged along a horizontal plane by a force acting along a rope attached to the object. If the rope makes an angle with the plane, then the magnitude of the force is

where is a positive constant called the *coefficient of friction* and where . Show that *F* is minimized when .

5. (a) Find the intervals on which *f* is increasing or decreasing.

(b) Find the local maximum and minimum values of *f*.

(c) Find the intervals of concavity and the inflection points.

6. Suppose is continuous on .

(a) If and , what can you say about f ?

(b) If and , what can you say about f ?

7. Find the limit. Use l’Hospital’s Rule where appropriate. If there is a more elementary method, consider using it. If l’Hospital’s Rule doesn’t apply, explain why.

8. Find all errors in the string



Then, determine the correct value of the limit.