Final Exam Math 190;   December 15, 2010

Aids allowed include a formula sheet of the format outlined in the course syllabus, and a calculator.

Exam length is 2 hours.
- Answer all questions in the booklets provided.
- Attach your formula sheet to the answer booklet.
- Show all your work to a level that indicates you are only using a calculator for basic mathematical operations.

1) **[15]**

The radius of the base of a tree (R) increases at a rate of 0.01 meters per year. The total height of the tree in meters (H) is related to the radius of the base of the tree by the following function.

At what rate is the height changing with respect to time when the height of the tree is 30 meters?

2) **[10]**

Differentiate $f(x)$ with respect to x.

3) **[10]**

Find A using the method of substitution

4) **[10]**

Find $I(x)$ using integration by parts

5) **[15]**

The function defining the acceleration of a car is   meters per second squared. How long will it take the car to travel 2000 meters if its initial velocity is 10 meters per second, and its initial position is —— of a meter?