

Mathematics 1132

Print Name: \_\_\_\_\_

Problem Set

Due Due Thursday, July 30, 2009

Signature: \_\_\_\_\_

Your signature is your pledge that you have adhered to the guidelines for problem sets and take-home examinations.

This problem set will be graded on the basis of 100 points but will be worth 50 points.

Make sure that you check the course website for instructions, available from the *General Policies* portion of the web site. Remember that your paper may be handed in before the deadline but that no late papers will be accepted regardless of the reason. The course website also includes an explanation of how your average will be calculated if you fail to complete this assignment.

Note that, since most of the calculations involved can be done routinely using either a calculator or a symbolic manipulation program such as Maple or Mathematica, it will obviously be necessary to show, through your work, exactly how you came up with your solutions.

1. How long will it take for the balance in a bank account to double if the bank pays interest at an annual rate of 2.7% compounded continuously? *Make sure you clearly define any variables you introduce. Give an exact conclusion followed by a decimal approximation.*
2. Find  $\tan(\arccos(-0.73))$ .
3. Find  $\arcsin(\sin(0.97))$ .
4. Let  $f(x) = \ln(\arcsin(3x))$ . Find the domain and derivative of  $f(x)$ .
5. Calculate  $\int (3x^2 + 2x + 1) \cos(x) dx$ .
6. Calculate  $\lim_{x \rightarrow 0^+} (\ln x)(\tan x)$ . *Extra Credit: Find the limit two completely different ways.*
7. Calculate  $\lim_{x \rightarrow 0} (1 - 3 \sin x)^{\frac{2}{x}}$ .

### Extra Credit

Extra credit will be awarded for the best joke. All jokes must observe standards of good taste. The determination of the best joke will be made by popular vote in class when the papers are returned.

Please write your joke here.