MATH 112-030 RECITATION 1

NAME:

Problem 1. What really is an integral doing?
In a nutshell:

Problem 2. What's the difference between an indefinite integral and an antiderivative of a function?
In a nutshell:

Problem 3. Why is the following operation permissible? $\int \frac{f(x)}{ag(x)}dx = \frac{1}{a}\int \frac{f(x)}{g(x)}dx$ where a is a constant.
Reason:

Problem 4. Why must one add a constant for every indefinite integral he/she finds? Bonus: what further information would one need to actually determine the value of this constant?
Reason:

Problem 5. Think algorithmically. As if you are designing a computer program to solve a particular problem. Compute the following. Provide at least two approaches to each problem, whether exact or approximate.

(1) $\int \cos\left(\frac{x}{6}\right) dx$
Method(s) of solution:
Solution:

(2) $\int \frac{1}{(3-x)^2}\,dx$

Method(s) of solution:

Solution:

(3) $\int 5x\left(9+x^2\right)^4\,dx$

Method(s) of solution:

Solution: