**Background and Example Problem**

In many cases, using the table of integrals effectively involves both

- Recognizing which table entry might apply from the form of the function, *and*
- Making a preliminary *u*-substitution to put the integral you want into the form given in the table entry. Today we want to practice recognizing which forms apply and doing the necessary substitutions.

**Discussion Problems**

A) Do a preliminary substitution based on the form and integrate by the table:

1) \( \int \frac{x}{\sqrt{7 + 3e^x}} \, dx \).
2) \( \int \tan^3(\ln(x)) \frac{dx}{x} \).
3) \( \int \frac{\sin x}{\cos^2 x + 6\cos x + 10} \, dx \).
   (Hint: Either before or after you substitute, you will also want to complete the square on the bottom.)
4) \( \int x^{3/2}e^{x^{1/2}} \, dx \).

B) Each of the integrals below looks very much like the others, but they are actually quite different forms. For each, say which method and/or table entries you need, and do the integration:

1) \( \int \frac{x}{\sqrt{9 - x^4}} \, dx \)
2) \( \int \frac{x}{\sqrt{9 - x^2}} \, dx \)
3) \( \int \frac{1}{x\sqrt{9 - x^2}} \, dx \)