In the previous lesson you learned a process for transforming antiderivatives and integrals. In every homework problem you were given:

\[ u = \text{formula with } x \]

Today you have to think of your own formulas.

1. Learn to make good choices for \( u = \text{formula with } x \)

2. Know that any choice is **allowed**. But not all choices are **useful**.

Here are some suggestions for how to make useful choices.

- If any part of the problem is a function with insides, consider:
  
  \[ u = \text{insides} \]

  **Example:** \( \int x\sqrt{4-x^2} \, dx \) The insides are \( u = 4-x^2 \).

- If there is a denominator more complicated than \( x \) or \( x^n \), consider:
  
  \[ u = \text{denominator} \]

  **Example:** \( \int \frac{x^2}{3x+4} \, dx \) The denominator is \( u = 3x+4 \).

- If some stuff looks like the derivative of some other stuff, consider:
  
  \[ u = \text{the other stuff} \]

  **Example:** \( \int \frac{1}{x} \ln x \, dx \) The derivative of \( \ln x \) is \( \frac{1}{x} \), so try \( u = \ln x \).

3. Know that these are not **rules**. They are **suggestions** for what work.

Many WebAssign exercises are set up so that you get immediate feedback on whether or not you make a good choice, but this is only in WebAssign. On a test, or in Calculus II, you have to judge whether you made a good choice.

The only way to do this is to complete the transformation and decide if the new integral or antiderivative is better than the original.