**Tabular Integration (or “Tic Tac Toe”**



So here we have a basic equation. Now, instead of doing the long version, Integration by Parts, we can check to see if we can do the new, shortened version, Tabular Integration. First, to see if we can actually do Tabular Integration, you look at LIPET:

1. Logs
2. Inverses
3. Polynomials ()
4. Exponential ()
5. Trig (sin, cos, tan, etc.)

LIPET shows which variable you set to “u” and whatever is left is set as “dv.” The downside to Tabular Integration Is that you can’t use it for every equation, Tabular only works with polynomials and trig in the equation or polynomials with exponential functions in the equation (“P” and “E” or “P” and “T”). So, in the equation above, you set “u” to and “dv” to sinx. First, draw a table with the headings “Sign”, “u”, and “dv” respectively.

For the “Sign” it’s just always going to be “+” then “-“ and that repeats until you are finished. To know when you are finished, you will get “u” equal to 0. To get “u” to be 0, you take the derivative of it, over and over until you get 0. As for “dv,” you integrate it until “u” = 0

As you can see, “u” eventually gets to 0. This may take longer or shorter than 4 steps. To finish off, and to actually get your answer, you “do the shortcut” as Jaime Escalante says in the movie Stand *and Deliver.* This is where Tabular Integration gets the nickname “Tic Tac Toe” and you connect the 3 columns as shown to the left.

Sign

u

dv

+

-

+

-

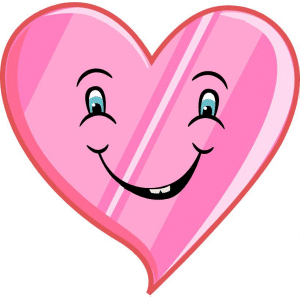


sinx

-cosx

-sinx

cosx



So you get:



Condensed this is…

+ **C**

Don’t forget “C” at the end! And there’s your answer, if you do integration by parts, you will get the same thing

2x

2

0