

Integration by Parts

To find an integral of a product of two functions (when a u-substitution doesn't work):

1. Call one function u and the other dv . Look for things to call u in this order: Ln, Inverse trig, Polynomial, Exponential, Trig.

Use the mnemonic LIPET to remember this.

2. Integrate dv to find v and take the derivative of u to find du .

3. Write the following:

$$\int u dv = uv - \int v du$$

4. Simplify the right side. Repeat if necessary. Remember to add a constant.

5. If this results in an endless loop, look for the original integral to show up. Add that to both sides of the equation and divide by the coefficient to get your answer.

If u has derivatives that go to 0 and v is repeatedly integrable, you can use tabular integration to save much time.