### Section 7.3

Antidifferentiation by Parts

### Homework Day 2:

#21-24

# What you'll learn about



- Product Rule in Integral Form
- Solving for the Unknown Integral

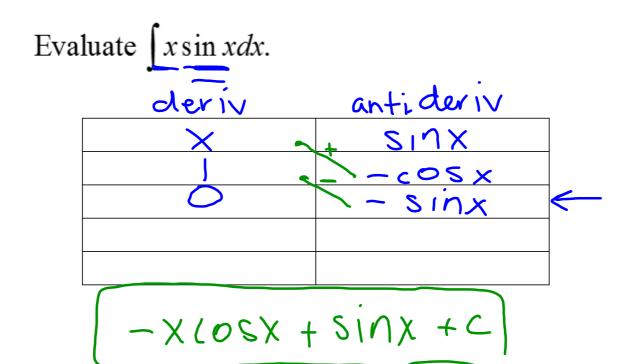
Tabular Integration

Inverse Trigonometric and Logarithmic Functions

### ... and why

The Product Rule relates to derivatives as the technique of parts relates to antiderivatives.

6. 
$$\int x^{2}e^{-x}dx$$
 $u = x^{2}$ 
 $v = \frac{e^{-x}}{4x} = -e^{-x}$ 
 $du = \partial x dx$ 
 $dv = e^{-x}dx$ 
 $u = \partial x$ 
 $u = \partial x$ 



# **EXAMPLE 6** Using Tabular Integration

Evaluate  $\int x^3 \sin x \, dx$ .

deriv	anti deriv
$\times^3$	sinx
$3x^3$	- cosx
<i>φ</i> χ ,	$-\sin x$
6	COSX
D	Sinx

-x3cosx +3x2sinx +6xcosx-6sinx+C

 $-e^{x^{4}}-4e^{x^{3}}-12e^{x^{2}}-24e^{x}-24e^{x}$  $-e^{x}(x^{4}+4x^{3}+12x^{2}+24x+24)+C$