MATH 122

INTEGRATION BY PARTS

GOALS

- ☐ KNOW WHEN/HOW TO USE INTEGRATION BY PARTS
- ☐ USE LIATED TO DETERMINE CHOICES FOR u, dv
- ☐ USE I.B.P. W/ SUBSTITUTION

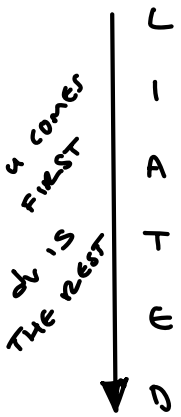
GOAL: INTEGRATE THINGS LIKE...

$$\int xe^x dx, \quad \int x\cos x\,dx, \quad \int \ln x\,dx, \quad \int \arctan x\,dx, \quad \int e^x \cos x\,dx, \quad \int \frac{\ln x}{x^5}\,dx, \ldots$$

PRODUCT RULE:

Ex: $\int x e^x dx$

HOW TO CHOOSE: DETAIL SPELLED BACKWARDS...



ex: $\int \arctan x \, dx =$

ex:

$$\int e^x \cos x \, dx =$$

Ex:

① $\int x \cos x \, dx =$

② $\int \ln x \, dx =$

Ex: $\int e^{\sqrt{x}} \, dx$

Ex: $\int_{\pi/4}^{\pi/2} 3x \csc^2 x \, dx$

$\int x f''(x) \, dx =$