thurs.

Integrals Chart

n= f(x)	l	
m m = -1	$\frac{u^{m+1}}{m+1}$ + C	kick it up by one then divide by it
Je ^u du	e" + c	
$\int \frac{1}{n} dn$	Inlul+C	
Jsin(n)du	- cos(n) +C	
S cos (n) dn	sin (n) + C	
(seclustan(u)du	sec(v) + C	

$$\int \frac{1}{1+u^2} du$$

$$\int \frac{1}{|u| \sqrt{u^2 - 1}} du$$

$$\int \frac{1}{\sqrt{1-u^2}} du$$

Integration technique (mining) think: chart - Ju du => kick it up by one then divide by it $\frac{dw}{dx} = 1$, du = dx= $\int_{X} u^{\frac{1}{2}} du$ Cosculda The "x" doesn't cancel, so I "mine" the equation above "u = x-1" so isolate x

 $= \int (u+1)u^{2}du = \int u^{2} + u^{2}du = \frac{\frac{5}{2}}{5} + \frac{\frac{3}{2}}{3} + C = \frac{5}{2}u^{2} + \frac{3}{2}u^{2} + C$ $= \int (u+1)u^{2}du = \int u^{2} + u^{2}du = \frac{\frac{5}{2}u^{2}}{5} + \frac{3}{2}u^{2} + C = \frac{3}{2}u^{2} + \frac{3}{2}u^{2} + C$ $= \frac{3}{2}u^{2} + \frac{3}{2}u^{2} + C$ $= \frac{3}{2}u^{2} + \frac{3}{2}u^{2} + C$ $= \frac{3}{2}(x-1)^{3} + \frac{3}{2}(x-1)^{3} + C$

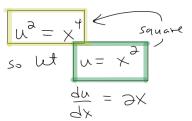
$$\int \frac{x}{1+x^{4}} dx \qquad \text{think } \tan^{3}(n)$$

$$\int \frac{1}{1+u^{2}} dn$$

$$\int \frac{1}{$$

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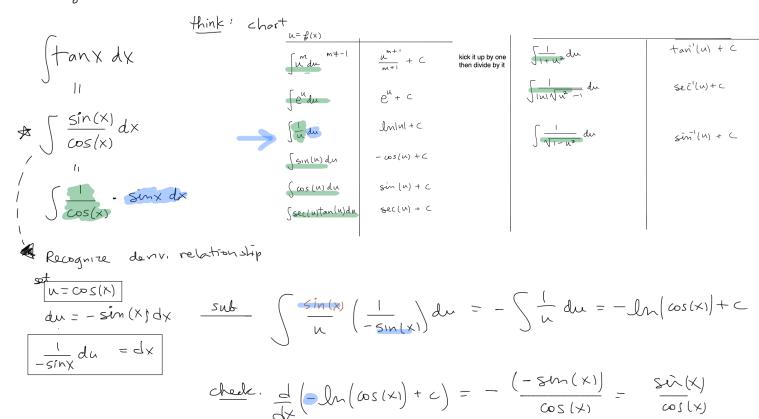
$$du = \partial x dx$$

$$\frac{1}{\partial x} \cdot du = dx$$

$$\frac{du}{dx} = \frac{\partial x}{\partial x}$$

$$\frac{du}{dx} = \frac{1}{2} \int \frac{1}{1+u^2} du = \frac{1}{2}$$

Challenge Problems



$$\int \frac{2x+1}{x^{2}+1} dx$$

deg, 1 differences:

leg, I differences:

$$u = x^{2} + 1$$

$$\frac{du}{dx} = 3x$$

$$\int \frac{3x+1}{u} \frac{1}{3x} du = \int \frac{1+\frac{1}{2x}}{u} du$$
mixed variable

try to split up!

$$\int \frac{x^{2}+1}{2x} dx + \int \frac{x^{2}+1}{1} dx$$

$$\int \frac{du}{u} + \tan^{1}x + c = \left[\ln \left(x^{2} + 1 \right) + \tan^{1}(x) + c \right]$$