7.3.1 PRACTICE

SOMETIMES WE NEED TO COMBINE THE METHODS WE'VE LEARNED.

EX. $\int \sin^{-1}(x)\,dx$

IBP: $u = \sin^{-1} x \qquad dv = dx$

$du = \frac{1}{\sqrt{1-x^2}}\,dx \qquad v = x$

$= x\sin^{-1} x - \int \frac{x}{\sqrt{1-x^2}}\,dx$

u-SUBSTITUTION: $u = 1-x^2$

$du = -2x\,dx$

$-\frac{1}{2}du = x\,dx$

$= x\sin^{-1} x + \frac{1}{2}\int u^{-1/2}\,du$

$= x\sin^{-1} x + \frac{1}{2}\cdot 2u^{1/2}$

$= \boxed{x\sin^{-1} x + \sqrt{1-x^2} + C}$

Ex. $\int \tan x \cdot \sec^2 x \cdot e^{\tan x}\, dx$

Substitution: $t = \tan x$

$dt = \sec^2 x\, dx$

$= \int t e^t\, dt$

IBP: $u = t \qquad dv = e^t dt$

$du = dt \qquad v = e^t$

$= te^t - \int e^t dt$

$= te^t - e^t + C$

$= (t-1)e^t + C$

$= \boxed{(\tan x - 1)e^{\tan x} + C}$

Hw 6

(7.2.1) P. 414 : 2-34 even, 44, 48

(7.3.3) P. 424 : 2-18 even