MAT 115 Worksheet 14
Thursday, Nov 16 2017

Important info: Welcome to the MAT 115 workshop! My name is **Diego Avalos** (avalosgalvez@cpp.edu), and I will be your workshop facilitator. We meet on Tuesdays and Thursdays from 4 to 5:50 pm in room 4-1-314. My office hour is on Mondays from 11:30 am to 12:30 pm in room 94-219. All worksheets and solutions may be found at the website **www.diegoavalos.net/teaching/mat115workshop2017**.

Derive the following results.

1. $\displaystyle\int \sec^3 x\,dx = \frac{1}{2}\sec x\tan x + \frac{1}{2}\ln|\sec x + \tan x| + C.$
2. $\displaystyle\int \tan^3 x\,dx = \frac{1}{2}\tan^2 x + \ln|\cos x| + C.$
3. $\displaystyle\int \sqrt{a^2 - x^2}\,dx = \frac{x}{2}\sqrt{a^2 - x^2} + \frac{a^2}{2}\sin^{-1}\frac{x}{a} + C,\ a > 0.$
4. $\displaystyle\int \frac{1}{x^2 - a^2}\,dx = \frac{1}{2a}\ln\left|\frac{x-a}{x+a}\right| + C,\ a > 0.$
5. $\displaystyle\int x\sqrt{ax+b}\,dx = \frac{2}{15a^2}(3ax - 2b)(ax+b)^{3/2} + C,\ a \neq 0.$
6. $\displaystyle\int e^{ax}\sin bx\,dx = \frac{e^{ax}(a\sin bx - b\cos bx)}{a^2 + b^2} + C.$
7. $\displaystyle\int \ln^n x\,dx = x\ln^n x - n\int \ln^{n-1} x\,dx + C.$