MAT 115 Worksheet 11
Tuesday, Nov 7 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**.

Solve the following trigonometric integrals.

1. $\int \cos^3 x \sin x \, dx$
2. $\int \sin^2 x \cos^3 x \, dx$
3. $\int \sin^2 x \cos^2 x \, dx$
4. $\int \sec^2(2x-1) \, dx$
5. $\int e^{-x} \tan(e^{-x}) \, dx$
6. $\int \tan^2 x \sec^2 x \, dx$
7. $\int \tan(4x) \sec^4(4x) \, dx$
8. $\int \sec^5 x \tan^3 x \, dx$
9. $\int \sqrt{\tan x} \sec^4 x \, dx$

Evaluate the following integrals using trigonometric substitution.

10. $\int \sqrt{4-x^2} \, dx$
11. $\int \frac{x^2}{\sqrt{16-x^2}} \, dx$
12. $\int \frac{1}{(4+x^2)^2} \, dx$

13. Find the exact arclength of the curve over the interval
    (a) $y = 3x^{3/2} - 1$ from $x = 0$ to $x = 1$
    (b) $y = x^{2/3}$ from $x = 1$ to $x = 8$
    (c) $24xy = y^4 + 48$ from $y = 2$ to $y = 4$

14. Find the area of the surface generated by revolving the given curves about the x-axis.
    (a) $y = 7x, 0 \leq x \leq 1$
    (b) $y = \sqrt{4-x^2}, -1 \leq x \leq 1$