Math 2205
Homework 1
Due Friday, Jan 23

Evaluate the following integrals. Do not forget to include $dx$ when appropriate and also include "$+C" when needed.

1. $\int \frac{\cos 2x}{(1 + \sin 2x)^2} dx$

2. $\int _1^2 \frac{1}{x \sqrt{x}} dx$

3. $\int e^{4x-7} dx$

4. $\int _0^2 \frac{x + 3}{(x^2 + 6x + 1)^3} dx$

5. $\int \frac{1}{\sqrt{1 - 4x}} dx$

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

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

8. Find the area in the region enclosed by the curves $y^2 = x + 5$ and $y^2 = 3 - x$.

9. Find the area in the region enclosed by the curves $x + y = 4$, $x - y = 0$, and $y + 3x = 4$.

10. Find the volume of the space over the region enclosed by $x + y = 4$ and $x - y = 0$, whose cross-sectional areas are squares.

11. Find the volume of the solid you get when you rotate the area between $y = x^2$ and the $x$-axis over $[0, 1]$ about the $y$-axis.