

# An Introduction to Mathematics For Political Science

## Problem Set 3

You are encouraged to work in groups and actively participate on the course discussion page. Submitted solutions must be your individual work. Do not use a calculator or search for solutions. Show all of your work. Starting this week all solutions must be written in LaTeX.

### Integration

1. Evaluate the following:

a)  $\int x^2 + 2x + 2 \, dx$

b)  $\int x^7 + x^{-3} - \frac{1}{x} \, dx$

c)  $\int_4^9 \frac{1}{x\sqrt{x}} \, dx$

d)  $\int e^{-x/3} \, dx$

e)  $\int e^{2x} - 2e^x - 2ex^2 \, dx$

f)  $\int_{-e^2}^{-1} \frac{4}{x} \, dx$

g)  $\int_0^2 2x^2 + 3x + 1 \, dx$

h)  $\int_{-a}^a x^5 \, dx$

i)  $\int e^{\sqrt{x}} \, dx$

j)  $\int \frac{e^{2x}}{2} \, dx$

k)  $6 \int x e^{2x} dx$

l)  $\int \frac{(6x^2+5)e^{2x}}{2} dx$

m)  $\int (2x^3 + 5x + 1)e^{2x} dx$