**Math 10a**
October 14, 2014
Integrals

1. Use a left Riemann sum with three rectangles to estimate

$$\int_{-1}^{1} \frac{1}{1+x^2}\,dx.$$

2. Use a midpoint Riemann sum with five rectangles to estimate

$$\int_{-1}^{1} \frac{1}{1+x^2}\,dx.$$

3. Use a right Riemann sum with four rectangles to estimate

$$\int_{-1}^{2} (x^3 - x)\,dx.$$

4. Compute

$$\int_{-1}^{2} \lfloor 2x \rfloor\,dx$$

where $\lfloor x \rfloor$ is the greatest integer less than or equal to $x$ (i.e., $\lfloor \ \rfloor$ means "round down").
Hint: first sketch the graph of $\lfloor x \rfloor$ and then of $\lfloor 2x \rfloor$.