

Math 10a
Practice Midterm 2 #1

1. (a) Compute $\int_{-1}^2 x dx$.
(b) If you were to estimate this integral with a left Riemann sum with six intervals, what would the estimate be?
(c) If you were to estimate this integral with a the trapezoid rule using six intervals, what would the estimate be?
2. (a) For what values of x does the following series converge?

$$\sum_{k=0}^{\infty} \frac{x^k}{k!}.$$

- (b) Write down a series of rational numbers converging to e .
3. Sketch, on the same graph, Gaussian functions associated to
 - mean 0 and standard deviation 1
 - mean 3 and standard deviation 1/2
 - mean -1 and standard deviation 5

4. Compute the following integrals:

(a)

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

(b)

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

(c)

$$\int \sqrt{x} \ln(x) dx$$

(d)

$$\int x \cos(x) dx$$

5. Compute the following integrals:

(a)

$$\int_1^{\infty} \frac{1}{x^2}$$

(b)

$$\int_a^b x^c dx$$

6. Write down a function that is a pdf, and then write down its cdf.