

Math 125 Final Exam Practice Problems

The final exam covers all of the sections covered in the course, but will emphasize the material from sections 7.4-7.8, and 4.4. You will have 75 minutes for the exam and can use a calculator and a notesheet (8.5×11 , both sides, handwritten).

There will be a take-home portion of the final exam consisting of 3 problems from the material in sections 8.1, 9.1, & 9.3. These problems will make up 12% of the final exam score.

Here are **some** practice problems for sections 7.4-7.8 and 4.4. For additional practice problems on sections from chapters 5, 6, and 7, see the practice problems from Exams #1 and 2. You should also look at previous homework problems and worksheets.

1. Extra problems from the text:

Chapter 7 Problems (pg. 541): 6, 18, 26, 28, 41-48, 61, 63, 64, 66-68, 71

L'Hospital's Rule (pg. 362): 7-14

2. Evaluate the following integrals.

(a) $\int \frac{y^3 - 4y + 7}{y^2 + 2y - 3} dy$

(b) $\int_0^8 \frac{dx}{\sqrt[3]{x-8}}$

(c) $\int_2^\infty \frac{3}{x^2 - x} dx$

(d) $\int \frac{t+7}{\sqrt{5-t}} dt$

(e) $\int_2^\infty \frac{dx}{x(\ln x)^2}$

3. Evaluate the following limits.

(a) $\lim_{x \rightarrow \infty} \frac{\ln(\ln x)}{x}$

(b) $\lim_{t \rightarrow 0^+} \sin(t)\ln(t)$

(c) $\lim_{x \rightarrow \infty} (e^x + 5x)^{1/x}$

4. Approximate the integral $\int_2^5 3x^2 \ln x dx$ using (a) the Trapezoid Rule and (b) Simpson's Rule with $n = 6$. (Round to four decimal places.) What is the exact value of the integral?