

# MATH 76

# Practice problems for Final Exam

Reminder: the **final exam** is on Wednesday, December 15 from 1:15 - 3:15 pm.

**Office hours:** Thursday, December 9 from 1 - 5pm; Friday, December 10 from 11am - 3pm; Monday, December 13 from 3 - 5 pm; Tuesday, December 14 from 1 - 3 pm.

There is a WeBWorK Review set that contains 24 review problems for which the system can check your answer. This set is due on **December 13 at 11:59 pm**, and you can get extra credit for it. Solutions to the WeBWorK Review set problems will be available at midnight. Those solutions have just been written, so if you find any mistakes in them, please let me know.

The problems given below are different from those given in WeBWorK (in particular, all graphs, which WeBWorK cannot grade, are given here). Solutions to these problems will be posted on the course web page.

Since the problems given here complement the WeBWorK problems, **you are strongly recommended to do both the WeBWorK Review set and these problems**. It is not sufficient to do only the WeBWorK problems, and it is definitely not sufficient to do only these.

Also, review all the tests (solutions are on the course web page), quizzes, WeBWorK homework problems, and recommended homework problems. If you have any questions or need help, please come to my office hours.

1. Sketch the graphs of the following functions.

(a) $f(x) = 2^x - 3$	(b) $g(x) = -\frac{e^{-x}}{2} + 1$
(c) $h(x) = \ln(1 + x)$	(d) $y = \log_5(x - 1)$

2. Find the exact value of each expression.

(a) $\log_2 32$	(b) $\log_{10} 2 + \log_{10} 50$
(c) $\log_4 8$	(d) $2^{\log_2 6 - \log_2 3}$
(e) $\arcsin\left(-\frac{1}{2}\right)$	(f) $\arctan(\sqrt{3})$

3. Solve the following equations.

(a) $\ln(2x - 1) = 3$	(b) $2^{x-5} = 3$
(c) $\ln x + \ln(x - 1) = 1$	(d) $\ln(\ln(x + 1)) = 1$

4. Write partial fraction decompositions of the following functions.

(a) $\frac{x + 1}{x^2 - 12x + 35}$	(b) $\frac{x^3 + 2}{x^2 + 2x + 1}$
(c) $\frac{x^4 - 5}{x^3 + x}$	(d) $\frac{1}{x^3(x + 1)(x^2 + 2)(x^2 + 3)^2}$

5. Sketch the following curves.

(a) $x = 2t, y = 3t^2$	(b) $x = 2 \cos(t), y = 3 \sin(t)$
(c) $r = -2\theta$	(d) $r = \cos(5\theta)$
(e) $x - y^2 - 2y - 3 = 0$	(f) $x^2 + y^2 - 2y - 3 = 0$
(g) $4x^2 + y^2 - 2y - 3 = 0$	(h) $4x^2 - y^2 - 2y - 3 = 0$