

### Review Problems (from the Textbook)

This is not an exhaustive list of all possible type of problems.  
Answers and solutions to odd exercises are in the book and Student Solutions Manual, respectively.

**Your exam preparations should include review of lecture notes, homework, and solving these review problems.** After review, use the sample exam as a test of readiness. If you can not confidently, independently and quickly solve the sample exam problems correctly, you will not do well on the exam.

Section	Problems	Section	Problems
6.1	27, 37, 39	6.2*	31, 37, 63, 73
6.3*	27, 41, 71, 87, 89	6.4*	21, 39, 47, 49
6.6	11, 19, 27, 63, 65, 67, 69	6.8	19, 33, 47, 59, 77
Chap 6 Review	All three parts except problems involving sections 6.5 and 6.7.		
7.1	5, 9, 17, 21, 27, 33, 37	7.2	5, 9, 17, 23, 27, 29
7.3	5, 7, 15, 21, 25, 29	7.4	9, 15, 23, 25, 31, 39
7.5	9, 13, 33, 51, 71	7.7	7(c), 21 ( $S_n$ & $E_s$ only)
7.8	7, 13, 21, 31, 33		
Chap 7 Review	All three parts except Exercises 51-58, 69 and problem parts involving Midpoint and Trapezoidal rules.		
8.1	9, 13, 15, 35	8.2	9, 13, 15, 17
8.3	5, 7, 11		
Chap 8 Review	Both parts except Concept Check 4-10 and Exercises 5 and 13-23.		
11.1	15, 23, 41, 47, 73, 77	11.2	17, 29, 43, 53, 57
11.3	7, 13, 17, 21, 29	11.4	7, 19, 23, 29, 31
11.5	3, 11, 17, 19, 25, 27	11.6	7, 15, 19, 27, 29, 39
11.7	3, 7, 17, 19, 27, 31	11.8	7, 11, 19, 25, 27
11.9	5, 15, 17, 25	11.10	13, 25, 27, 31, 55
11.11	5 & 7 (Don't graph), 13(a, b), 23, 27 (Don't graph)		
Chap 11 Review	All three parts corresponding to our course coverage, except Exercises 10, 57(b, d), 58(b, d) and 60(b).		
10.1	1, 9, 13, 19	10.2	7, 13, 33, 41, 61
10.3	5, 17, 25, 39, 55	10.4	9, 21, 23, 31
10.5	7, 15, 23, 27, 43		
Chap 10 Review	All three parts except problems involving section 10.6 and Exercises 19, 20, 27, 43 and 44.		

Calculus II  
Math 1220  
Sample Exam I - 5 pages  
Sections 6.1, 6.2\*-6.4\*, 6.6, 6.8 & 7.1

Name: \_\_\_\_\_

Time Limit: 90 Minutes<sup>1</sup> No Scratch Paper Calculator Allowed: Not CAS capable  
The point value of each problem is in the left-hand margin. You must show your work to receive any credit, except in problem 1. Work neatly.

(10) 1. True or False.

(        ) (a)  $\frac{d}{dx}(2^x) = x(2^{x-1})$  for all real numbers  $x$ .

(        ) (b)  $\sin^{-1}(\sin \frac{3\pi}{4}) = \frac{3\pi}{4}$ .

(        ) (c) For any  $x > 0$ ,  $\ln x = \int_1^x \frac{1}{t} dt$ .

(        ) (d)  $(f^{-1})'(a) = \frac{1}{f'(f^{-1}(a))}$ , if  $f$  is a one-to-one differentiable function with  $f'(f^{-1}(a)) \neq 0$ .

(        ) (e)  $\frac{d}{dx}(\tan^{-1} x) = \frac{1}{1-x^2}$  for any real number  $x$ .

(8) 2. Find the equation of the line tangent to the curve  $y = x \ln x$  at  $(e, e)$ .

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<sup>1</sup>If you exceed the time limit, you will receive a score of zero.

(7) 3. Evaluate  $\lim_{x \rightarrow 0} (1 - x)^{\frac{1}{x}}$ .

(15) 4. Find the Indicated derivative. Do not simplify your answers.

(a)  $y'$ , if  $y = (\cos x) \sin^{-1}(2x - 1)$

(b)  $f'(x)$ , if  $f(x) = \frac{x e^{-x}}{\log_2 x + 1}$

(c)  $\frac{dy}{dx}$ , if  $y = 2^x \arctan x$

(8) 5. Find the derivative of  $y = (1 - x)^{\frac{1}{x}}$ . Write your answer in terms of  $x$ .

(28) 6. Evaluate the following integrals.

(a)  $\int \sin^{-1} x \, dx$

(b)  $\int_0^1 \frac{3^x}{3^x + 1} \, dx$

6. Continued.

(c)  $\int_1^2 \frac{\sec^{-1} x}{x\sqrt{x^2-1}} dx$

(d)  $\int e^x \sin x dx$

(8) 7. Evaluate  $\sec(\tan^{-1} x)$ , where  $x > 0$ , by converting it to an algebraic form.

(8) 8. Consider the 1-1 function  $f(x) = 2x^3 + x + 5$ . Notice that  $f(-1) = 2$ . Find  $(f^{-1})'(2)$ .

(8) 9. Find the area between the curve  $f(x) = \frac{1}{1-\sin x}$  and the  $x$ -axis from  $x = 0$  to  $x = \frac{\pi}{6}$ .