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 Final Exam - 8 pages
Sections 6.1, 6.2*-6.4*, 6.6, 6.8, 7.1-7.5, 7.7, 7.8,
8.1-8.3, 10.1-10.5 & 11.1-11.11

Name:_____

Time Allowed: 1 hour and 50 minutes 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) The MacLaurin series of e^x is $\sum_{n=0}^{\infty} \frac{x^n}{n!}$.

( ) (b) The value of Taylor series of any infinitely many times differentiable function is equal to the value of that function, at every x value in the domain.

( ) (c) The series $\sum_{n=1}^{\infty} \frac{n}{n+1}$ converges.

( ) (d) In polar coordinates ordered pairs $(1,\ 4\pi/3)$ and $(1,\ -2\pi/3)$ represent the same point in the plane.

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

( ) (f) The Cartesian equation of the parametric curve $x = 1 - t$, $y = t^2$ is $y = 1 - x^2$.

( ) (g) If $\sum_{n=1}^{\infty} a_n$ is convergent, then $\lim_{n\to\infty} a_n = 0$.

( ) (h) $\int_{-\infty}^{\infty} f(x)\,dx = \lim_{t\to\infty} \int_{-t}^{t} f(x)\,dx$ for every function f continuous on the interval $(-\infty,\ \infty)$.

( ) (i) It is possible for a region to have finite area but infinite perimeter.

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

(16) 2. Find the Indicated derivative.

(a) y', if $y = \frac{e^x \ln x}{e^x + \ln x}$

(b) $\left.\frac{df^{-1}}{dx}\right|_{x=f(3)=-2}$, if $f(3) = -2$, $f'(3) = -\frac{3}{4}$, $f'(-2) = -1$ and $f^{-1}(-\frac{3}{4}) = -5$

(c) $\frac{dy}{dx}$, if $y = (1-x)^{2x}$

(d) $f'(x)$, if $f(x) = 2^{5x} \arcsin(x^2)$

(5) 3. Evaluate $\lim_{x \to (\frac{\pi}{2})^-} \dfrac{\sec x}{1 + \tan x}$.

(6) 4. Identify the graph of $9x^2 + 4y^2 = 36$. Find all of the following that applies: foci, vertices, directrix, and asymptotes. Draw its graph.

(5) 5. Find the limit of the sequence $\left\{\dfrac{2^n}{n!}\right\}_{n=1}^{\infty}$, if it exists.

(20) 6. Evaluate the following integrals.

(a) $\int_0^1 x\, 3^{x^2}\, dx$

(b) $\int \frac{1}{1-x^2}\, dx$

(c) $\int \sqrt{1-9x^2}\, dx$

6. Continued.

(d) $\int_0^1 x \ln x \, dx$

(e) $\int_0^{\pi/3} (\sec x)^5 (\tan x)^3 dx$

(5) 7. Find the length of the curve $y = \frac{4\sqrt{2}}{3} x^{\frac{3}{2}} - 1$, $0 \leq x \leq 1$.

(12) 8. Determine convergence or divergence of the following series. State the tests used and show your work.

(a) $\sum_{n=1}^{\infty} \frac{3^{n-1}+1}{3^n}$

(b) $\sum_{n=1}^{\infty} \left(\frac{2n+1}{3n-1}\right)^n$

(c) $\sum_{n=1}^{\infty} n\, e^{-n}$

(10) 9. Find the radius of convergence and the interval of convergence of the power series $\sum_{n=1}^{\infty} \frac{(-1)^n x^n}{n^2}$. Show all your work.

(6) 10. Find the area of the region in the plane enclosed by the cardioid $r = 2 - 2\sin\theta$.

(5) 11. Find the area of the surface generated by revolving the curve $y = 2\sqrt{x}$, $1 \leq x \leq 2$, about the x-axis.