Some Additional 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.
(For more problems, see your class notes, examples in the book and homework problems.)

Section	Problems	Section	Problems
1.5	9, 17, 33	1.6	9, 19, 21, 39, 43
1.7	17, 21	1.8	3, 13, 35, 45, 49(b), 53
Chap 1 Review	Concept Check: 12-19, True-False Quiz: 6-27, Exercises 23-52.		
2.1	3(a, b), 5, 13, 27, 33	2.2	1, 9, 23, 35, 47
2.3	25, 33, 51, 61, 69, 81	2.4	7, 9, 23, 41, 45
2.5	33, 41, 49, 51, 61	2.6	9, 15, 21, 29, 59
2.7	1(a-f), 9	2.8	9, 13, 15, 17, 25, 29, 45
2.9	3, 11, 17, 23, 27		
Chap 2 Review	All three parts, except Exercises 7-9, 12, 43, 44, 49-52, 73, 75, 76, 82, 83 and 89-92.		
3.1	39, 47, 51, 55	3.2	7, 11, 19
3.3	11, 13, 23, 35, 39, 43	3.4	15, 17, 21, 25, 55
3.5	15, 17, 25, 29, 39, 49	3.7	15, 21, 31, 35, 37
3.8	7, 11, 13, 17	3.9	15, 19, 33, 57
Chap 3 Review	All three parts, except Exercises 29-32, 48 and 61-66.		
4.1	3, 13, 21	4.2	9, 23, 37, 49, 63
4.3	11, 13, 29, 31, 33, 37	4.4	9, 11, 25, 31, 41, 57
4.5	17, 19, 25, 27, 39, 51		
Chap 4 Review	All three parts, except Exercises 31-34 and 52-58.		
5.1	9, 11, 15, 17, 35	5.2	7, 9, 11, 17, 29
5.3	5, 11, 17, 19, 37	5.4	9, 13, 17, 21, 23
5.5	5, 11(a, b), 13		
Chap 5 Review	All three parts, except Exercises 18, 29(b), 33 and 34.		

Calculus I
Math 1210
Sample Exam II - 5 pages
Sections 2.7-3.5

Name:_____

Time Limit: 90 Minutes[1] No Scratch Paper Calculator Allowed: Scientific

The point value of each problem is in the left-hand margin. You must show your work to receive any credit, except on problems 1 and 2. Work neatly.

(7) 1. True or False.

( ) (a) The oblique asymptote of the graph of the function $f(x) = \frac{x^2}{x-1}$ is the line $y = x$.

( ) (b) The critical numbers of the function f are only those numbers at which the 1st derivative, f', is zero.

( ) (c) If $y = -x^2 + 4x - 10$ and $\frac{dx}{dt}|_{x=2} = -4$, then $\frac{dy}{dt}|_{x=2} = 0$.

( ) (d) If function f is continuous on the interval $[a, b]$ and differentiable on (a, b), then there is at least one number c in (a, b) such that $f'(c) = \frac{f(b)-f(a)}{b-a}$.

( ) (e) If $f''(x) \geq 0$ for x's near c and $f''(c) = 0$, then graph of $y = f(x)$ has an infelction point at $x = c$.

( ) (f) The differential of $y = x \sin x - 1$ is $dy = x \cos x$.

( ) (g) Suppose function f is defined on an interval I containing c. If in the interval I, $f'(x) < 0$ for $x < c$ and $f'(x) > 0$ for $x > c$, then function $y = f(x)$ has a local minimum at $x = c$.

(7) 2. Draw the graph of a function $y = f(x)$ with the following properties: $f(-1) = 4$, $f(1) = 0$, $f'(-1) = f'(1) = 0$, $f'(x) < 0$ if $|x| < 1$, $f'(x) > 0$ if $|x| > 1$, $f''(x) < 0$ if $x < 0$, and $f''(x) > 0$ if $x > 0$.

[1] **If you exceed the time limit, you will receive a score of zero.**

(15) 3. Evaluate the following limits algebraically.

(a) $\lim_{x\to\infty} \dfrac{5x^3 - 7x + 11}{3x^4 - 5x^2 + 6x + 2}$

(b) $\lim_{x\to\infty} (x - \sqrt{x^2 + 2x}\,)$

(c) $\lim_{x\to-\infty} \dfrac{\sqrt{x^2 + 1}}{2x + 1}$

(6) 4. Find all asymptotes of the graph of the function $f(x) = \frac{x^3+2x}{x^2-x}$.

(10) 5. A 6-ft tall man walks at the rate of $4\,ft/sec$ toward a street light that is $15\,ft$ above the ground. At what rate is the length of his shadow changing when he is $8\,ft$ from the street light.

(8) 6. Use the Rolle's (or the Mean Value Theorem) to show that the equation $x^5 + 2x + 1 = 0$ can not have more than one real-valued solution.

(7) 7. The position of an moving object at time t is given by $s(t) = t^4 - 4t$. Find this object's acceleration at the time its velocity is zero.

(15) 8. Find the absolute maximum and minimum values of $f(x) = \frac{x}{x^2+4}$ in the interval $[-1, 3]$.

(10) 9. Find the approximate value of $\sqrt[3]{62}$ using the linearization of an appropriate function.

(15) 10. Consider the function $f(x) = x(x^2 - 5)^{1/3}$. State its domain. Find x- and y-intercepts, if any. Find its symmetry, if any. Find its asymptotes, if any. Find its critical points and determine the intervals in which it is increasing or decreasing. Find the inflection points of its graph and intervals in which it is concave up or concave down. Use these information to graph it.