Math 111

Text book: Calculus, the Classic edition, Fifth Ed. By Earl W. Swokowski.

Chapters: 5, 6, 7, 8, 9, 10 & 13.

Chapter 5:

5.1 All except (Examples 6, 7, 8, 9).

5.2 All.

5.3 Summation notation (5.9), Example 1, Theorem (5.10), Example 2, Theorems (5.11) & (5.12), Examples 3 & 4, Restate Example 6: Find the area using limit of Riemann sum and right endpoints (This could be solved after Section 5.4). Also the following question: Find the value of α that satisfies the following equation:

1-$\sum_{k=1}^{5}(\alpha k^2 + 2) = 120$

2- $\sum_{k=1}^{3}(\alpha - k) = \alpha$

5.4 All except (Definition 5.15, Example 1 & 3).

5.5 All except (Definition 5.29, Example 6). (**Proof of Theorem 5.28 included).**
For Corollary (5.27): Solve extra examples using algebraic methods.
Without solving the integral prove that:

(a) $\int_1^3 \frac{1}{x^2+6}dx \leq \int_1^3 \frac{1}{x+4}dx$

(b) $\int_2^6 \frac{x}{x+8}dx \leq \int_2^6 \frac{x}{10}dx$

(c) $\int_0^1 x\,dx \geq \int_0^1 x^2\,dx$

(d) $\int_1^2 x\,dx \leq \int_1^2 x^2\,dx$

5.6 Fundamental theorem of calculus(5.30), Corollary (5.31), Examples 1,2,3 & 4,Theorem (5.33), Examples 5 & 6, Theorem (5,35), Example 8, Exercises (51,52,53,55), (**Proof of Theorem 5.30 is included**).

Chapter 6:

6.1 All.

6.2 All except Example 4.

6.3 All except Example 2.

6.5 Definition (6.14), Example 1. Definition (6.15), Example 2 part (a). Definition (6.19) and the formula of the surface generated by revolving a graph about y-axis (at the end of page (340)), Example 4.

Chapter 7:

7.2 All except Example 7, (**Proof of Theorem 7.12 (i) & (ii) is included**).

7.3 All except Examples 3&4.

7.4 All except Example 5.

7.5 All except Example 3, Theorem 7.32 not included.

Chapter 8:

8.2 All except Example 1.

8.3 All (With graph of 8.10) . **(Proof of Theorem 8.14 (i) & (ii) is included).** But Example 2 not included.

8.4 All, (**Proof of Theorems 8.16 (i) & 8.17 (i) &(ii) included**).

Chapter 9:

9.1 All.

9.2 All except 7.

9.3 All.

9.4 All.

9.5 All.

9.6 All, also $\int \sqrt{1+\sqrt{x}}\, dx$ and Exercise 6.

Chapter 10:

10.1 All except Cauchy formula 10.1 and Example 7

10.2 All except Example 5

10.3 Definition (10.5) Examples 1 & 2,Definition (10.6), Example 3.

10.4 Definitions (10.7) & (10.8). Examples 1, 2, 3 & 4.

Chapter 13:

13.3 All except ((13.9), Theorem 13.10, Examples 3, 4, 5 and 9), Exercise 14 is included.

Test of symmetry:

1. The graph of the polar equation $r = f(\theta)$ is symmetric with respect to the polar axis if $f(\theta) = f(-\theta)$
2. The graph of the polar equation $r = f(\theta)$ is symmetric with respect to the vertical line $\theta = \frac{\pi}{2}$ if $f(\theta) = -f(-\theta)$
3. The graph of the polar equation $r = f(\theta)$ is symmetric with respect to the pole if $f(\theta) = -f(\theta)$.

13.4 Theorem (13.11) Examples 1 & 2 and Exercise 19.

Exercise Sheet

5.1	1,6,7,9,12,14,15,16,18,20,23,24,26,27,28,29,30,31,32,33,34,35,38,39,42, 43,44,45,46,47,48
5.2	3,8,13,15,20,21,22,23,26,28,30,31,33,34,35,37,38,39,40,41,42,43,44,45, 46,47,48.
5.3	1,5,6,7,9,11,15,17,31,32. Solve 31 & 32 using limit of Riemann sum and right and left endpoints.
5.4	5,7,10,17,18,19,20,21,22,28,30,31,34,35,36
5.5	5,9,10,13,15,17,20,23,27,28,30
5.6	9,12,16,17,18,22,24,26,29,32,33,35,36,37,40,41,42,43,44,54,56
6.1	6,10,11,12,13,27,29,30,32,35
6.2	6,7,13,15,21,23
6.3	7,9,12,18,28,30
6.5	5, 6,7,9,11,12,13,30,32,35,36
7.2	4,6,12,16,18,20,35,40,44
7.3	4,8,11,16,18,20,22,24,30,32
7.4	3,6,8,9,13,16,18,19,22,26,30,33,36,37
7.5	4,6,12,14,16,17,28,32,34,36,40,43,44
8.2	1, 4, 10, 13, 15, 24, 29, 31, 34,37, 38, 41, 43
8.3	3, 6, 7, 8, 10, 15, 20, 24, 28, 29, 31, 32, 34, 35, 36, 37, 39, 42, 43, 44.
8.4	4, 6, 8, 10, 11, 13, 15, 18, 19, 20, 21, 22, 23, 24, 25
9.1	4, 6, 7, 11, 13, 14, 16, 17, 19, 22, 24, 39, 42, 43
9.2	1, 2, 3, 6, 9, 10, 11, 12, 13, 16, 17, 21, 25, 27, 29
9.3	1, 3, 4, 5, 6, 7, 9, 11, 12, 19, 21, 22
9.4	1, 2, 9, 13, 14, 16, 19, 25
9.5	1, 3, 5, 7, 9, 15, 17
9.6	1, 5, 7, 19, 21, 24
10.1	2, 4, 5, 7, 9, 11, 15, 17, 19, 20, 23, 24, 28, 29, 33, 35, 47
10.2	1, 4, 5, 8, 11, 13, 15, 16, 18, 19, 23, 25, 26, 27, 29
10.3	2,3,6,10,13,14,15,17,19,21,24
10.4	1,4,5,6,8,9,11,14,16,18,21,22,25,27,30
13.3	1,3,5,6,13,27,28,30,33,37,41,46
13.4	1,3,4,18,20,22