

COURSE OUTLINE

Textbook: *Single Variable Calculus, Early Transcendentals* by James Stewart, 5th ed., 2003.

Sect	Topic	Homework (odd numbers only)
1.1	Four ways to represent a function.....	1, 5-11, 17-41, 45-53, 57-63
1.3	New functions from old functions (combinations/compositions only)	31, 35, 39, 41, 45, 49, 55, 57
1.5	Exponential functions.....	5, 7, 9, 11
2.2	Limit of a function.....	1-9, 12, 13, 15, 21-27
2.3	Limit laws.....	1-27, 33-45
2.5	Continuity	1-7, 11, 15-23, 35, 37, 39, 40, 41, 45, 46
2.6	Limits at infinity: horizontal asymptotes.....	1, 3-7, 11, 15-31, 33-47, 51
2.7	Tangents, velocities & other rats of change.....	1-19
2.8	Derivatives.....	1-9, 13-25
2.9	The derivative as a function.....	1-17, 21-31, 37, 43
3.1	Derivatives of Polynomials & Exponential functions.....	1-31, 39, 41, 45-57
3.2	Product & Quotient rules.....	1-27(a), 31-35, 43
3.4	Derivatives of Trigonometric functions.....	1-23, 29, 33, 35-47
3.5	Chain rule.....	1-45, 51-57
3.6	Implicit differentiation (omit inverse trig. functions).....	1-27
3.7	Higher order derivatives.....	1-19, 29-35, 43, 47
3.10	Related rates.....	1-25, 31
1.6	Inverse and Logarithmic functions.....	1-13, 17-27, 31-43, 47-51
3.8	Derivatives of logarithmic functions.....	1-49
4.1	Max and Min values.....	1-25, 31-61, 45
4.2	Mean Value Theorem.....	11-15
4.3	How Derivatives affect the shape of a graph.....	1-45, 63-67
4.5	Curve Sketching (omit oblique asymptotes).....	1-23, 31, 33, 43-49
4.7	Optimization Problems.....	1-19, 29, 31, 33
4.10	Antiderivatives.....	1-49, 61, 63, 69, 75
5.1	Areas and Distances.....	3, 5, 11
5.2	Definite integral.....	1-7, 29-45
5.3	Fundamental Theorem of Calculus.....	1-11, 15-35, 39, 41, 49, 51

REQUIRED THEOREMS

- 2.9 Differentiable functions are continuous
- 3.1 $(cf)' = c f'$
- 3.1 $(f + g)' = f' + g'$
- 3.2 $(fg)' = f'g + fg'$
- 3.4 $(\sin(x))' = \cos(x)$
- 4.2 $f' = 0$ on I implies f is constant on I
- 4.3 $f' > 0$ on I implies f is increasing on I
- 4.3 $f' < 0$ on I implies f is decreasing on I