



OPEN

18.01 | Fall 2006 | Undergraduate

Single Variable Calculus

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Lecture Notes

SES #	TOPICS	LECTURE NOTES	
Derivatives			
1	Derivatives, slope, velocity, rate of change	(PDF - 1.1 MB)	Ses #1-7 complete (PDF - 5.2 MB)
	Limits, continuity		
2	Trigonometric limits	(PDF - 2.6 MB)	
3	Derivatives of products, quotients, sine, cosine	(PDF)	
	Chain rule		
4	Higher derivatives	(PDF)	
5	Implicit differentiation, inverses	(PDF)	
	Exponential and log		
6	Logarithmic differentiation; hyperbolic functions	(PDF)	
7	Exam 1 review	(PDF)	
8	Exam 1 covering Ses #1-7	(No Lecture Notes)	
Applications of Differentiation			
9	Linear and quadratic approximations	(PDF)	Ses #9-16 complete (PDF - 6.9 MB)
10	Curve sketching	(PDF - 1.8 MB)	
11	Max-min problems	(PDF - 1.1 MB)	
12	Related rates	(PDF - 1.0 MB)	
13	Newton's method and other applications	(PDF - 1.2 MB)	
	Mean value theorem		
14	Inequalities	(PDF)	
15	Differentials, antiderivatives	(PDF)	
16	Differential equations, separation of variables	(PDF)	
17	Exam 2 covering Ses #8-16	(No Lecture Notes)	
Integration			
18	Definite integrals	(PDF)	Ses #18-25 complete (PDF - 8.6 MB)
19	First fundamental theorem of calculus	(PDF)	
20	Second fundamental theorem	(PDF)	
21	Applications to logarithms and geometry	(PDF - 1.4 MB)	
22	Volumes by disks and shells	(PDF - 1.7 MB)	
23	Work, average value, probability	(PDF - 2.2 MB)	
24	Numerical integration	(PDF - 1.1 MB)	
25	Exam 3 review	(PDF)	

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Techniques of Integration		
26	Trigonometric integrals and substitution	(PDF)
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28	Integration by inverse substitution; completing the square	(PDF)
29	Partial fractions	(PDF)
30	Integration by parts, reduction formulae	(PDF - 1.4 MB)
31	Parametric equations, arclength, surface area	(PDF)
	Polar coordinates; area in polar coordinates	(PDF - 2.0 MB)
32	Exam 4 review	(PDF)Ses #26-38 complete (PDF - 8.6 MB)
33	Exam 4 covering Ses #26-32	(No Lecture Notes)
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38	Final review	(PDF)