

MAC2233 Objectives and Homework List

Each objective covered in MAC2233 is listed below. Along with each objective is the homework list used with MyMathLab (MML) and a list to use with the text (if you want to use the text to practice problems).

Here is an example on how to read the list.

Under Chapter 2, section 2.1, objective “Use the properties of limits to find limits algebraically”, you will find MML HW 30(2.1.54). This tells you problem 30 from *2.1 Homework* on MyMathLab is coded 2.1.54, which means it corresponds to section 2.1 problem number 54 in the text. The corresponding problem in the text can be found on p.103 #54.

Note: The *Algebra Review Homework* does not have corresponding text problems.

Chapter 2: Limits and the Derivative

2.1 Introduction to Limits:

Use the graph of a function to estimate limits and function values:

MML HW 1(2.1.9), 2(2.1.17), 3(2.1.13), 4(2.1.15), 5(2.1.16), 6(2.1.21), 7(2.1.22),
8(2.1.23), 9(2.1.25), 10(2.1.26), 11(2.1.27)

Text p.102 #9,13,15-17,21-23,25-27

Use the properties of limits find limits algebraically:

MML HW 12(2.1.31-Setup & Solve), 13(2.1.33-Setup & Solve), 14(2.1.37-Setup & Solve), 15(2.1.41-Setup & Solve), 16(2.1.45-Setup & Solve), 17(2.1.29), 18(2.1.31),
19(2.1.33), 20(2.1.35), 21(2.1.37), 22(2.1.41), 23(2.1.43), 24(2.1.45), 27(2.1.51),
28(2.1.52), 29(2.1.53), 30(2.1.54), 31(2.1.55), 32(2.1.56), 33(2.1.57), 34(2.1.58),
35(2.1.59), 36(2.1.61), 37(2.1.63), 38(2.1.65)

Text p.102-103 #29-37 odd, 41-45 odd, #51-59, 61-65 odd

Sketch the graph of a function using limits and function values:

MML HW 25(2.1.47), 26(2.1.49)

Text p.103 #47,49

Use the properties of limits to discuss whether a given statement is valid:

MML HW 39(2.1.67), 40(2.1.69), 41(2.1.71)

Text p.104 #67-71 odd

Find the limit of a difference quotient:

MML HW 42(2.1.81), 43(2.1.83)

Text p.103 #81,83

2.2 Infinite Limits and Limits at Infinity

Find the infinite limits and limits at infinity using a graph:

MML HW 1(2.2.9), 2(2.2.11), 3(2.2.13), 4(2.2.15)

Text p.115 #9-15 odd

Find limits of rational functions:

MML HW 5(2.2.17), 6(2.2.19), 7(2.2.21), 8(2.2.23)

Text p.115 #17-23 odd

Find the limits of functions at infinity:

MML HW 9(2.2.25), 10(2.2.27), 11(2.2.30), 12(2.2.32), 13(2.2.33), 14(2.2.37),
15(2.2.39)

Text p.115 #25,27,30,32,33,37,39

Find horizontal and vertical asymptotes:

MML HW 16(2.2.51), 17(2.2.53), 18(2.2.55), 19(2.2.57), 20(2.2.59), 21(2.2.61),
22(2.2.63)

Text p.116 #51-63 odd

Describe the end behavior of a function:

MML HW 23(2.2.67), 24(2.2.68), 25(2.2.69), 26(2.2.71)

Text p.116 #67-69, 71

2.3 Continuity

Estimate function values and limits using the graph of the function:

MML HW 1(2.3.19), 2(2.3.20), 3(2.3.21), 4(2.3.27), 5(2.3.29)

Text p.126-127 #19-21,27,29

Use the continuity properties of functions to determine where a function is continuous:

MML HW 6(2.3.31), 7(2.3.35), 8(2.3.37), 9(2.3.39), 10(2.3.61), 11(2.3.63)

Text p.127 #31,35-39 odd, 61,63

Use the continuity properties of functions to discuss the validity of a statement:

MML HW 12(2.3.77), 13(2.3.79), 14(2.3.81)

Text p.128 #77-81 odd

Solving applications involving continuity:

MML HW 15(2.3.89), 16(2.3.97)

Text p.128-129 #89,97

2.4 The Derivative

Find the slope of a line given two points on the line:

MML HW 1(2.4.1), 2(2.4.2), 3(2.4.3), 4(2.4.4)

Text p.141 #1-4

Find average and instantaneous rates of change:

MML HW 5(2.4.9), 6(2.4.11)

Text p.142 #9,11

Write the equation of a tangent line given the slope of the function at that point:

MML HW 7(2.4.15), 8(2.4.17)

Text p.142 #15,17

Use the four-step process to find the derivative of a function and evaluate the derivative:

MML HW 9(2.4.19), 10(2.4.21), 11(2.4.29), 12(2.4.33), 13(2.4.35), 14(2.4.37),
15(2.4.41)

Text p.142 #19,21,29,33,35,37,41

Solving applications involving derivatives and rates of change:

MML HW 16(2.4.81), 17(2.4.83)

Text p.144 #81,83

2.5 Basic Differentiation Properties

Write expressions in form x^n :

MML HW 1(2.5.1), 2(2.5.2), 3(2.5.4), 4(2.5.5)

Text p.152 #1,2,4,5

Use basic differentiation properties to find the derivative of a function:

MML HW 5(2.5.9), 6(2.5.11), 7(2.5.13), 8(2.5.15), 9(2.5.21), 10(2.5.23), 11(2.5.35),
12(2.5.17), 13(2.5.19), 14(2.5.25), 15(2.5.31), 16(2.5.33), 17(2.5.37), 18(2.5.39),
19(2.5.41), 20(2.5.43), 21(2.5.45), 22(2.5.47), 23(2.5.51), 24(2.5.53), 25(2.5.77),
26(2.5.79), 27(2.5.81), 28(2.5.82)

Text p.152-153 #9-25 odd, 31-47 odd, 51,53,77-81 odd, 82

Find equations of tangent lines, and values of x for the line tangent to a function is horizontal:

MML HW 29(2.5.59), 30(2.5.61), 31(2.5.63)

Text p.153 #59-63 odd

Solving applications involving derivatives:

MML HW 32(2.5.89), 33(2.5.91)

Text p.153 #89,91

2.7 Marginal Analysis in Business and Economics

Find marginal cost, revenue, and profit functions:

MML HW 1(2.7.9), 2(2.7.11), 3(2.7.13), 4(2.7.15), 5(2.7.17)

Text p.169 #9-17 odd

Find marginal average cost, revenue, and profit functions:

MML HW 6(2.7.21), 7(2.7.23), 8(2.7.25)

Text p.169-170 #21-25 odd

Solving applications involving cost, revenue, and profit functions:

MML HW 9(2.7.45-No Graph), 10(2.5.37), 11(2.7.39), 12(2.7.41), 13(2.7.43)

Text p.153 #37-45 odd

Chapter 3: Additional Derivative Topics

3.1: The constant e and Continuous Compound Interest

Solve equations in the form of the continuous compound interest formula:

MML HW 1(3.1.4), 2(3.1.5), 3(3.1.13), 4(3.1.17), 5(3.1.19)

Text p.185 #4,5,13,17,19

Solving applications involving continuous compound interest:

MML HW 6(3.1.27), 7(3.1.29), 8(3.1.31), 9(3.1.37), 10(3.1.34), 11(3.1.35), 12(3.1.39)

Text p.186 #27-31 odd, 34, 35-39 odd

3.2: Derivatives of Exponential and Logarithmic Functions

Find derivatives of functions containing base e exponential or natural logarithmic terms:

MML HW 1(3.2.13), 2(3.2.15), 3(3.2.19), 4(3.2.20), 5(3.2.28), 6(3.2.21), 7(3.2.23),
8(3.2.26), 9(3.2.43), 10(3.2.44)

Text p.194 #13,15,19-21,23,26,28,43,44

Find the equation of a tangent line to a graph of an exponential or logarithmic function:

MML HW 11(3.2.31), 12(3.2.33), 13(3.2.35)

Text p.194 #31-35 odd

Find derivatives of functions containing other exponential and logarithmic terms:

MML HW 14(3.2.47), 15(3.2.55), 16(3.2.49), 17(3.2.57)

Text p.195 #47,49,55,57

3.3: Derivatives of Products and Quotients

Find the derivative of a product using the product rule:

MML HW 1(3.3.9-Setup & Solve), 2(3.3.19-Setup & Solve), 3(3.3.23-Setup & Solve), 4(3.3.9), 5(3.3.12), 6(3.3.17), 7(3.3.19), 8(3.3.23), 16(3.3.37), 17(3.3.43), 20(3.3.47), 21(3.3.49), 22(3.3.55), 23(3.3.56), 24(3.3.85), 25(2.3.71)

Text p.202-203 #9,12,17,19,23,37,43,47,49,55,56,71,85

Find the derivative of a quotient using the quotient rule:

MML HW 9(3.3.15), 10(3.3.29), 11(3.2.31), 12(3.2.33), 13(3.2.35), 14(3.3.91), 15(3.3.25), 18(3.3.39), 19(3.3.45), 26(3.3.73)

Text p.202-203 #15,25,19,31-35 odd, 39,45,73,91

Find the equation of a tangent line to the graph of a product or quotient function:

MML HW 27(3.3.61), 28(3.3.63)

Text p.202 #61,63

Find the x-values at which the derivative of a function is zero:

MML HW 29(3.3.67), 30(3.3.69), 31(3.3.70)

Text p.203 #67,69,70

Solve applications involving the derivative of products and quotients:

MML HW 32(3.3.93), 33(3.3.95)

Text p.203 #93,95

3.4: The Chain Rule

Find derivatives of composite functions:

MML HW 1(3.4.17), 2(3.4.19) 3(3.4.21), 4(3.4.27), 5(3.4.29), 6(3.4.33), 7(3.4.41), 8(3.4.43), 9(3.4.45), 10(3.4.23), 11(3.4.25), 12(3.4.47), 13(3.4.31), 14(3.4.49), 15(3.4.51), 16(3.4.53), 17(3.4.55), 18(3.4.63), 19(3.4.65), 20(3.4.67), 21(3.4.79), 22(3.4.81), 23(3.4.83), 24(3.4.89)

Text p.213-214 #17-33 odd,41-55 odd, 63-67 odd,79-83 odd,89

Find tangent lines to the graph of a composite function:

MML HW 25(3.4.37), 26(3.4.39), 27(3.4.40), 28(3.4.57), 29(3.4.59)

Text p.213 #37,39,40,57,59

Solve applications involving derivatives that require the chain rule:

MML HW 30(3.3.91), 31(3.3.93)

Text p.214 #91,93

3.7: Elasticity of Demand

Find relative rates of change:

MML HW 1(3.7.9), 2(3.7.11) 3(3.7.13), 4(3.7.15), 5(3.7.17), 6(3.7.19), 7(3.7.21), 8(3.7.23)

Text p.233-234 #9-23 odd

Find percentage rates of change:

MML HW 9(3.7.25), 10(3.7.27), 11(3.7.29), 12(3.7.31)

Text p.234 #25-31 odd

Find the elasticity of demand

MML HW 13(3.7.33), 14(3.7.35), 15(3.7.37), 16(3.7.38), 17(3.7.51), 18(3.7.53)

Text p.234 #33-37 odd, 38,51,53

Determine whether demand is elastic, inelastic, or had unit elasticity:

MML HW 19(3.7.47), 20(3.7.49), 21(3.7.57)

Text p.234 #47,49,57

Find values for which demand is elastic or inelastic:

MML HW 21(3.7.57)

Text p.234 #57

Solve applications involving the elasticity of demand:

MML HW 22(3.7.85), 23(3.7.87)

Text p.235 #85,87

Chapter 4: Graphing and Optimization

4.1 First Derivatives and Graphs

Find intervals on which functions are increasing and decreasing and local extrema:

MML HW 1(4.1.9), 2(4.1.11), 3(4.1.15), 4(4.1.33), 5(4.1.35), 6(4.1.37), 7(4.1.39),

8(4.1.43), 9(4.1.45), 10(4.1.37-Setup & Solve), 11(4.1.45-Setup & Solve)

Text p.252-253 #9,11,15,33-39 odd, 43,45

Use or create sign charts for graphs of functions:

MML HW 12(4.1.7), 13(4.1.19), 14(4.1.21), 15(4.1.23)

Text p.252 #7,19-23 odd

Find critical numbers of functions:

MML HW 16(4.1.27), 17(4.1.29), 18(4.1.85), 19(4.1.89)

Text p.253,255 #27,29,85,89

Sketch graphs of functions:

MML HW 20(4.1.49), 21(4.1.53), 22(4.1.55-Setup & Solve), 23(4.1.55), 24(4.1.61),

25(4.1.63), 26(4.1.65), 27(4.1.75), 28(4.1.77), 29(4.1.81), 30(4.1.83)

Solve applications involving the graph of a function's first derivative:

MML HW 31(4.1.91), 32(4.1.93), 33(4.1.95)

Text p.255-256 #91-95 odd

4.2 Second Derivatives and Graphs

Identify intervals of graphs of functions with certain properties and determine inflection points:

MML HW 1(4.2.9), 2(4.2.31), 3(4.2.33), 4(4.2.35), 5(4.2.37), 6(4.2.39)

Text p.269-270 #9,31-39 odd

Graph functions given descriptions of the first and second derivative of the function:

MML HW 7(4.2.13-16)

Text p.269 #13-16

Find derivatives of functions:

MML HW 8(4.2.17), 9(4.2.19), 10(4.2.23)

Text p.269 #17,19,23

Use curve sketching techniques to graph:

MML HW 13(4.2.45), 14(4.2.47), 15(4.2.49), 16(4.2.51), 17(4.2.53),
18(4.2.57), 19(4.2.59), 20(4.2.61), 21(4.2.65), 22(4.2.69), 23(4.2.71), 24(4.2.73)
Text p.270-271 #45-53 odd, 57-61 odd, 65-73 odd

Analyze graphs of functions:

MML HW 25(4.2.75), 26(4.2.77)
Text p.271 #75,77

4.4 Curve Sketching Techniques

Describe functions given graphs:

MML HW 1(4.4.9)
Text p.292 #9

Graph functions given properties of graphs:

MML HW 2(4.4.15), 3(4.4.17), 4(4.4.19), 5(4.4.21)
Text p.292-293 #15-21 odd

Sketch the graph of a function:

MML HW 6(4.4.23), 7(4.4.25), 8(4.4.29), 9(4.4.35), 10(4.4.37), 11(4.4.41), 12(4.4.43),
13(4.4.45), 14(4.4.47), 15(4.4.49), 16(4.4.59)
Text p.293-294 #23,25,29,35,37,41-49 odd, 59

Solve applications involving graphs of functions:

MML HW 17(4.4.79)
Text p.294 #79

4.5 Absolute Maxima and Minima

Find absolute extrema given the graph of a function:

MML HW 1(4.5.3), 2(4.5.7), 3(4.5.9), 4(4.5.11), 5(4.5.13), 6(4.5.15), 7(4.5.17), 8(4.5.18)
Text p.302-303 #3-17 odd, 18

Find the absolute extrema of a function:

MML HW 9(4.5.19-Setup & Solve), 10(4.5.26-Setup & Solve), 11(4.5.27-Setup &
Solve), 12(4.5.35-Setup & Solve), 13(4.5.19), 14(4.5.21), 15(4.5.26), 16(4.5.27),
17(4.5.31), 18(4.5.33), 19(4.5.35), 20(4.5.43), 21(4.5.47), 22(4.5.49), 23(4.5.51),
24(4.5.57), 25(4.5.59), 26(4.5.61)
Text p.303 #19,21,36,27,31-35 odd, 43, 47-51 odd, 57-61 odd

Determine the type of extreme from given information:

MML HW 27(4.5.73), 28(4.5.75), 29(4.5.77), 30(4.5.79)
Text p.304 #73-79

4.6 Optimization

Optimize the product of two numbers:

MML HW 1(4.6.9), 2(4.6.11), 3(4.6.13)
Text p.313 #9-13

Solve area and perimeter optimization problems:

MML HW 4(4.6.15), 5(4.6.17)
Text p.313 #15,17

Solve application involving optimization:

MML HW 6(4.6.19), 7(4.6.21), 8(4.6.25), 9 (4.6.27), 10(4.6.29), 11(4.6.31), 12(4.6.33)
Text p.313-314 #19-33 odd (not 23)

Chapter 5: Integration

5.1 Antiderivatives and Indefinite Integrals

Find indefinite integrals:

MML HW 1(5.1.9), 2(5.1.11), 3(5.1.13), 4(5.1.15), 5(5.1.17), 6(5.1.19), 7(5.1.21),
8(5.1.23), 9(5.1.43), 10(5.1.45), 11(5.1.47), 12(5.1.49), 13(5.1.67), 14(5.1.69),
15(5.1.51), 16(5.1.53)

Text p.332-333 #9-23 odd, 43-49 odd, 51,53,67,69

Verify antiderivatives:

MML HW 17(5.1.35), 18(5.1.37)

Text p.333 #35,37

Find particular antiderivatives:

MML HW 19(5.1.55), 20(5.1.57), 21(5.1.58), 22(5.1.59), 23(5.1.61)

Text p.333 #55,57-59,61

Solve applications involving antiderivatives and indefinite integrals:

MML HW 24(5.1.87-No Graph), 25(5.1.81), 26(5.1.85), 27(5.1.89)

Text p.334 #81-89 odd

5.2 Integration by Substitution

Reverse the chain rule to find indefinite integrals:

MML HW 1(5.2.9), 2(5.2.11), 3(5.2.15), 4(5.2.17), 5(5.2.19), 6(5.2.11-Setup & Solve)

Text p.344 #9-19 odd

Use the method of substitution to find the indefinite integrals:

MML HW 7(5.2.25-Setup & Solve), 8(5.2.31-Setup Solve), 9(5.2.35-Setup & Solve),
10(5.2.41-Setup & Solve), 11(5.2.23), 12(5.2.25), 13(5.2.27), 14(5.2.29), 15(5.2.30),
16(5.2.31), 17(5.2.33), 18(5.2.35), 19(5.2.37), 20(5.2.40), 21(5.2.41), 22(5.2.43),
23(5.2.59), 24(5.2.61), 26(5.2.62), 27(5.2.65), 28(5.2.67), 29(5.2.68)

Text p.345 #23-29 odd,30,31-37 odd, 40,41,43,59,61,62,65,67,68

Find the family of all antiderivative of a derivative:

MMML HW 30(5.2.71), 31(5.2.75)

Text p.345 #71,75

Solve applications involving antiderivatives that require substitution:

MML HW 32(5.2.81-A,B Only), 33(5.2.77), 34(5.2.79), 35(5.2.80)

Text p.345-346 #77,79,80-81

5.4 The Definite Integral

Use the properties of definite integral to evaluate them:

MML HW 1(5.4.Instructor Question), 2(5.4.31), 3(5.4.32), 4(5.4.33), 5(5.4.35),
6(5.4.37), 7(5.4.39), 8(5.3.40), 9(5.4.41), 10(5.4.43), 15(5.4.45), 16(5.4.49), 17(5.4.51),
18(5.4.53)

Text p.367 #31-33,35-39 odd,40,41,43,45,49-53 odd

Identify rectangles under curves:

MML HW 11(5.4.7), 12(5.4.13)

Text p.366 #7,13

Graphs and identify areas by left and right sums:

MML HW 13(5.4.17), 14(5.4.19)

Text p.366 #17,19

5.5 The Fundamental Theorem of Calculus

Evaluate the integrals using the fundamental theorem of calculus:

MML HW 1(5.5.13), 2(5.5.14), 3(5.5.15), 4(5.5.17), 5(5.5.19), 6(5.5.21), 7(5.5.23),
8(5.5.25), 9(5.5.27), 10(5.5.29), 11(5.5.31), 12(5.5.32), 13(5.5.37), 14(5.5.39),
15(5.5.61), 16(5.5.41), 17(5.5.45), 18(5.5.59)

Text p. 377-378 #13-15,17-31 odd,32,37,39,41,45,59,61

Solve applications involving definite integrals and the fundamental theorem of calculus:

MML HW 19(5.5.77-A,B Only), 20(5.5.69), 21(5.5.70), 22(5.5.83), 23(5.5.81),
24(5.5.82)

Text p.378-379 #69,70,77,81-83

Compute average values of functions over intervals:

MML HW 25,26 are from a different text

Chapter 6: Additional Integration Topics

6.1 Area Between Curves

Set up definite integrals to represent indicated areas on graphs:

MML HW 1(6.1.9), 2(6.1.11), 3(6.1.13), 10(6.1.35), 11(6.1.36), 12(6.1.37), 13(6.1.40)

Text p.395 #9-13 odd,35-37,40

Find the area between curves over given intervals:

MML HW 4(6.1.15), 5(6.1.17), 6(6.1.19), 7(6.1.21), 8(6.1.23), 9(6.1.25), 14(6.1.41),
15(6.1.43), 16(6.1.44), 17(6.1.45), 18(6.1.47), 19(6.1.53), 20(5.1.55), 21(6.1.49),
22(6.1.51), 23(6.1.65)

Text p.395-396 #15-25 odd,41,43-45,47-55 odd, 65

Solve application involving finding the area between curves:

MML HW 24(6.1.79), 25(6.1.89)

Text p.397-398 #79,89

6.2 Applications in Business and Economics

Solve applications involving probability density functions:

MML HW 1(6.2.21), 2(6.2.23), 3(6.2.25), 4(6.2.27)

Text p.407-408 #21-27 odd

Solve applications involving consumers' and/or producers' surplus:

MML HW 5(6.2.69), 6(6.2.73), 7(6.2.74), 8(6.2.77-No Graph), 9(6.2.81-No Graph)

Text p.409-410 #69,73,74,77,81

Chapter 7: Multivariable Calculus

7.1 Functions of Several Variables

Evaluate functions of several variables:

MML HW 1(7.1.9), 2(7.1.11), 3(7.1.13), 4(7.1.15), 5(7.1.17), 6(7.1.19), 7(7.1.27),
8(7.1.31), 9(7.1.33), 10(7.1.35)
Text p.441-442 #7-19 odd, 27, 31-35 odd

Solve applications involving functions of several variables:

MML HW 11(7.1.67), 12(7.1.65), 13(7.1.169), 14(7.1.72)
Text p.443 #65-69 odd, 72

7.2 Partial Derivatives

Find first-order partial derivatives

MML HW 1(7.2.17), 2(7.2.19), 3(7.2.21), 4(7.2.23), 6(7.2.25), 7(7.2.27), 8(7.2.29),
9(7.2.31)
Text p.450 #17-31 odd

Find second-order partial derivatives

MML HW 5(7.2.51), 10(7.2.53), 11(7.2.39), 12(7.2.41), 13(7.2.43), 14(7.2.45),
15(7.2.47), 16(7.2.49), 17(7.2.55), 18(7.2.57), 19(7.2.59), 20(7.2.69), 21(7.2.71),
22(7.3.73)
Text p.450 #39-59 odd, 69-73 odd

Solve applications involving partial derivatives:

MML HW 23(7.2.85), 24(7.2.87), 25(7.2.95)
Text p.451 #85, 89, 95

7.3 Maxima and Minima

Use the second-derivative test to characterize relative extrema of functions of several variables:

MML HW 1(7.3.17), 2(7.3.19), 3(7.3.25), 4(7.3.33), 5(7.3.20), 6(7.3.23), 7(7.3.27),
8(7.3.29), 9(7.3.31), 10(7.3.37)
Text p.459 #17, 19, 20, 23-33 odd, 37

Solve applications involving maxima and minima:

MML HW 11(7.3.41), 12(7.3.43)
Text p.460 #41, 43