

## Second Quarter Assignments

### AP Calculus AB

M-T, Oct. 26-27 Quiz, §3.5-3.8; §3.9	<i>Objectives</i> See last class. <i>Assignment</i> <b>Quiz, Trig Derivatives and the Chain Rule; §3.9</b> 4, 7, 16, 22, 29, 32
Wed., Oct. 28 §3.9	Today is the last official day of the first quarter. <i>Objectives</i> Differentiate exponential and logarithmic functions. <i>Assignment</i> <b>§3.9</b> 8, 38, 41, 44, 45
Th-F, Oct. 29-30 §8.1	<i>Objectives</i> Use L'Hôpital's rule to evaluate indeterminate limits. <i>Vocabulary</i> indeterminate forms, L'Hôpital's rule <i>Assignment</i> <b>§8.1</b> 5, 6, 7, 10, 16, 17, 19
M-T, Nov. 2-3 §8.1, review	<i>Objectives</i> Use the definition of derivative to find the derivative of a function. Use appropriate notation for derivatives. Relate the graph of $f$ to its derivative. Determine when a function is differentiable. Identify locally linear behavior. Connect differentiability and continuity. Calculate derivatives using the power rule, product rule, and quotient rule. Use the concept of the derivative in applications from physics and economics. Differentiate trigonometric functions. Use the chain rule to differentiate composite functions. Use implicit differentiation to find derivatives when it is difficult or impossible to isolate the dependent variable. Differentiate the inverse trig functions. Differentiate exponential and logarithmic functions. Use L'Hôpital's rule to evaluate indeterminate limits. <i>Assignment</i> <b>§8.1</b> 21, 32, 43, 45, 46, 52
Wed., Nov. 4 review	<i>Objectives</i> See last class. <i>Assignment</i> Study for the test.
Th-F, Nov. 5-6 Test, Ch. 3	<i>Objectives</i> See last class. <i>Assignment</i> <b>Test, Derivatives</b>
M-T, Nov. 9-10 §4.1	<i>Objectives</i> Find absolute and relative extrema and critical points. <i>Vocabulary</i> absolute maximum value, absolute minimum value, global max and min, absolute extrema, extreme value theorem, local maximum value, local minimum value, relative extrema, critical point, critical number <i>Assignment</i> <b>§4.1</b> 1, 6, 9, 11, 18, 21, 30, 40, 47
Wed., Nov. 11 <b>Portfolio (IB) or THT (AP) assigned, due Nov. 19-20</b>	<i>Objectives</i> IB: Model natural behavior with mathematical functions. AP: Compute a variety of limits and derivatives. <i>Assignment</i> AP students: Take-Home Test, multiple-choice, 100 points. <b>No late passes accepted.</b> IB students: Type II portfolio assignment, Crows Dropping Nuts, 100 points
Th-F, Nov. 12-13 §4.2	<i>Objectives</i> Use the mean value theorem to connect average rate of change on an interval to instantaneous rate of change at a point. Determine increasing and decreasing behaviors of functions. Understand what it means for a function to be an antiderivative. <i>Vocabulary</i> Rolle's theorem, mean value theorem for derivatives, increasing on an interval, decreasing on an interval, increasing and decreasing functions, monotonic, antiderivative <i>Assignment</i> <b>§4.2</b> 7, 10, 13, 16, 21, 36, 37, 38, 44
M-T, Nov. 16-17 §4.2, review; Free Response Quiz	<i>Objectives</i> See last class. <i>Assignment</i> <b>Free Response Quiz</b> ; study for Wednesday's quiz
Wed., Nov. 18 Quiz, §4.1-4.2	<i>Objectives</i> Find absolute and relative extrema and critical points. Use the mean value theorem to connect average rate of change on an interval to instantaneous rate of change at a point. Determine increasing and decreasing behaviors of functions. Understand what it means for a function to be an antiderivative. <i>Assignment</i> <b>Quiz, Extrema and the Mean Value Theorem</b>
Th-F, Nov. 19-20 §4.3 <b>THT or portfolio task due</b>	<i>Portfolio assignment (IB) or Take-Home Test (AP) due at beginning of class. Note that AP students may NOT use a late pass on this take-home test.</i> <i>Objectives</i> Use the first and second derivative tests to find extrema. Determine concavity using the second derivative. Use information about its derivatives to graph a function. <i>Vocabulary</i> first derivative test, concavity, point of inflection, second derivative test <i>Assignment</i> <b>§4.3</b> 2, 8, 11, 27, 31, 33, 35, 42
M-T, Nov. 30-Dec. 1 §4.3, 4.4	<i>Objectives</i> Use the first and second derivative tests to find extrema. Determine concavity using the second derivative. Use information about its derivatives to graph a function. Use calculus techniques to solve optimization problems. <i>Vocabulary</i> optimization <i>Assignment</i> <b>§4.3</b> 45, 46, 47, 48; <b>§4.4</b> 7, 10, 12, 15
Wed., Dec. 2 §4.4	<i>Objectives</i> Use calculus techniques to solve optimization problems. <i>Assignment</i> <b>§4.4</b> 17, 19, 20, 37
Th-F, Dec. 3-4 §4.6; Free Response Quiz	<i>Objectives</i> Solve problems involving related rates of change. <i>Assignment</i> <b>Free Response Quiz; §4.6</b> 2, 6, 7, 8, 11

M-T, Dec. 7-8 §4.6	<b>Objectives</b> Solve problems involving related rates of change. <b>Assignment</b> §4.6 13, 17, 31, 35
Wed., Dec. 9 review	<b>Objectives</b> Find absolute and relative extrema and critical points. Use the mean value theorem to connect average rate of change on an interval to instantaneous rate of change at a point. Determine increasing and decreasing behaviors of functions. Understand what it means for a function to be an antiderivative. Use the first and second derivative tests to find extrema. Determine concavity using the second derivative. Use information about its derivatives to graph a function. Solve problems involving related rates of change. <b>Assignment</b> Study for test.
Th-F, Dec. 10-11 review	<b>Objectives</b> See last class. <b>Assignment</b> Study for test.
M-T, Dec. 14-15 Test, Ch. 4	<b>Objectives</b> See last class. <b>Assignment</b> <b>Test, Applications of Derivatives</b>
Wed., Dec. 16 §5.1	<b>Objectives</b> Approximate the area under a curve using rectangles. <b>Vocabulary</b> rectangular approximation method, LRAM, RRAM, MRAM <b>Assignment</b> §5.1 9, 12, 26
Th-F, Dec. 17-18 §5.1, 5.2; Free Response Quiz	<b>Objectives</b> Approximate the area under a curve using rectangles. Calculate Riemann sums. Define definite integrals in terms of Riemann sums. Evaluate definite integrals using area formulas. <b>Assignment</b> <b>Free Response Quiz; §5.2</b> 19, 22
T-W, Jan. 5-6 §5.2	<b>Objectives</b> Calculate Riemann sums. Define definite integrals in terms of Riemann sums. Evaluate definite integrals using area formulas. <b>Vocabulary</b> sigma notation, Riemann sum, partition, subinterval, Riemann sum for $f$ on the interval $[a, b]$ , norm of the partition, definition of a definite integral, integrable, regular partitions, upper limit of integration, lower limit of integration, integral sign, integrand, variable of integration, dummy variable, area under a curve <b>Assignment</b> §5.2 8, 15, 18, 24, 27, 35, 36, 37, 38
Th-F, Jan. 7-8 §5.2	<b>Objectives</b> See last class. <b>Assignment</b> §5.2 39, 42, 43, 46 (preferably in class)
M-T, Jan. 11-12 §5.3	<b>Objectives</b> Use the properties of definite integrals to simplify them. Find the mean value of a function on an interval. Connect derivatives and integrals graphically. <b>Vocabulary</b> properties of definite integrals, average (mean) value of a function, mean value theorem for definite integrals <b>Assignment</b> §5.3 2, 3, 6, 10, 15, 19
Wed., Jan. 13 §5.3; Free Response Quiz	<b>Objectives</b> See last class. <b>Assignment</b> <b>Free Response Quiz; §5.3</b> 22, 27, 29, 41
Th-F, Jan. 14-15 §5.4	<b>Objectives</b> Understand and use the fundamental theorem of calculus (both parts). Find total area. <b>Vocabulary</b> The Fundamental Theorem of Calculus (parts 1 and 2), integral evaluation theorem, total area, net area <b>Assignment</b> §5.4 1, 4, 8, 12, 17, 19, 26, 28, 32, 52
T-F, Jan. 19-22 Exam week — when I have more information about how this works, I will tell you.	<b>Objectives</b> IB: Review topics studied thus far in the IB Mathematics SL curriculum. AP: Review topics studied thus far in the AP Calculus AB curriculum. <b>Assignment</b> Study for semester exam; <b>First semester exam</b>