

# MASTERY OF LEARNING: CONCEPTS

<u>Concept</u> <u>Quiz</u> <u>Scores</u>	<u>Mastery Level</u>		
10 - 9	<b>HIGH ACHIEVING</b>	<b>4</b>	<i>Student demonstrates mastery/understanding of the concept and is able to apply it at a high level.</i>
8.5 - 7	<b>PROFICIENT</b>	<b>3</b>	<i>Student demonstrates mastery/understanding of the concept &amp; can apply it in nearly all cases given.</i>
6.5 - 5	<b>PROGRESSING</b>	<b>2</b>	<i>Student demonstrates some mastery/understanding of the concept however is unable to always apply it.</i>
4.5-2.5	<b>BEGINNING</b>	<b>1</b>	<i>Student demonstrates little mastery/understanding of the concept &amp; has great difficulty in applying it.</i>
2 - 0	<b>INCOMPLETE</b>	<b>0</b>	<i>Student shows no evidence of mastery/understanding the concept.</i>

#	<u>Concept (description)</u>	<u>Date Taken</u>	<u>Mastery Level</u>	<u>Graph</u>			
				1	2	3	4
1	Simplify expressions with exponents and with radicals						
2	Simplify expressions using the four basic operations						
3	Solve various equation types						
4	Graph an equation using x and y intercepts, symmetry, and other points						
5	Write and graph linear equations in slope-intercept form						
6	Solve systems of equations						
7	Determine the domain and range of functions						
8	Evaluate functions and create compositions of functions						
9	Use technology to find various aspects of an equation and its graph						
10	Use technology to discover mathematical models						
11	Find the slope of the tangent line (rate of change) via the limit process						
12	Find the area under a curve via the limit process						
13	Find the length of a curve via the limit process						
14	Find limits using numerical methods such as a table of values						
15	Find limits by using graphs						
16	Find limits using the analytical method of substitution						
17	Find the limit of a function using other analytical methods such as cancellation and rationalization						
18	Find limits with the position function						
19	Determine the place and type of discontinuities in a function						
20	Determine one-sided, infinite, and two-sided limits						
21	Differentiate by the limit process						
22	Graph the first derivative						
23	Use basic differentiation rules						
24	Differentiate the position function to find various velocity types and acceleration						
25	Differentiate with the product rule						

#	<u>Concept (description)</u>	<u>Date Taken</u>	<u>Mastery</u>	<u>Graph</u>
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#	Concept Description	Exit Exam	Level	1	2	3	4
26	Differentiate with the quotient rule						
27	Derive trigonometric functions						
28	Find multiple derivatives						
29	Use the chain rule to find the derivative						
30	Apply implicit differentiation theory with other rules used to derive						
31	Set up and solve rate-related applications using derivatives						
32	Find critical numbers and absolute extrema of a function on a given interval						
33	Apply the Extreme Value and Rolle's Theorems to a function						
34	Find the intervals where a function is increasing or decreasing						
35	Determine the relative extrema of a function						
36	Use technology to find key elements of a function						
37	Find the intervals where a function is concave up or concave down and determine points of inflection						
38	Graph elements of a function						
39	Optimize a function and do error analysis using differentiation ideas						
40	Integrate a function						
41	Utilize summation formulas and write summations from a series						
42	Use the exhaustion method and Riemann Sums to determine the area under a curve						
43	Evaluate integrals using given information						
44	Apply the Fundamental Theorem of Calculus						
45	Use the Mean Value Theorem and determine the average value of a function						
46	Integrate a function with u-substitution						
47	Apply other rules (Simpson's & Trapezoidal) to find the area under a curve						
48	Utilize logarithmic rules						
49	Differentiate using various rules with logarithms						
50	Use logarithmic differentiation as an alternative tool to discover the rate of change						
51	Integrate logarithms using various techniques						
52	Determine the inverse of a function and its properties						
53	Solve, derive, and integrate natural logarithmic and exponential functions						
54	Solve, derive, and integrate logarithmic and exponential functions with bases other than 'e'						
55	Use mathematics to solve growth and decay problems.						
56	Verify and find solutions to differential equations						
57	Derive and integrate transcendental functions						
58	Calculate the area between curves						
59	Determine volume using various methods of a solid of revolution						
60	Evaluate arc length and surface area of a solid of revolution using integration formulas						