PS 1   Solve and describe functions including linear, polynomial, rational, exponential, logarithmic, trigonometric, inverse trigonometric, parametric, polar, and piece-wise analytically, graphically, numerically, and verbally.

PS 2   Find, describe, and compare limits and asymptotic/unbounded behavior of functions analytically, graphically, numerically, and verbally including one-sided limits.

PS 3   Define continuity in terms of limits and graphs (including Intermediate Value Theorem and Extreme Value Theorem).

PS 4   Compute and determine the derivative of functions and relations using power rule, product rule, quotient rule, chain rule, and implicit differentiation; and logarithmic differentiation of functions including power, exponential, logarithmic, trigonometric; and their inverses analytically, graphically, numerically, and verbally and as a rate of change and difference quotient.

PS 5   At a point, find the slope of a curve, the instantaneous rate of change, and average rate of change of the function analytically, graphically, numerically, and verbally. Write the equation of the tangent line and the equation of the normal line.

PS 6   Distinguish between characteristics of *f, f',* and *f"* and the relationship between increasing and decreasing behavior and concavity analytically, graphically, numerically, and verbally.

PS 7   Solve problems using the derivative analytically, graphically, numerically, and verbally for a variety of problems (including optimization, related rates, rectilinear motion).

PS 8   Solve problems including those that model physical (including acceleration, velocity, and position), biological, or economic situations and average value.

PS 9   Solve problems including those that model area, volume, and surface area.

PS 10   Interpret and apply the relationship between derivative and definite integral as expressed in both parts of the Fundamental Theorem of Calculus.

PS 11   Compute anti-derivatives of functions and relations using derivatives of basic functions and substitution.

PS 12   Find specific anti-derivatives using initial conditions, including applications to motion along a line and solve separable and logistic differential equations and use them in modeling.

PS 13   Approximate and interpret definite integrals of functions represented analytically, graphically, and numerically using Riemann sums (using left, right, and midpoint evaluation points) and trapezoidal sums.

PS 14   Model a written description of a physical situation with a function, a differential equation, or an integral.