

# Learning Goals

## Understand Limits and Derivatives

|  |  |   |
|--|--|---|
|  |  | 1: I can compute instantaneous rate of change by using average rates of change.   |
|  |  | 2: I can evaluate limits of basic functions algebraically.  |
|  |  | 3: I can evaluate limits of basic functions geometrically.  |
|  |  | 4: I can sketch the derivative given the graph of a function.   |
|  |  | 5: I can use first derivative to describe the monotonicity of a function.   |
|  |  | 6: I can use second derivative to describe the concavity of a function.   |
|  |  | 7: I can determine whether a function has a limit at a point, whether a function is continuous at a point, and whether a function is differentiable at a point. |
|  |  | 8: I can find the algebraic equation of the tangent line to a differentiable function at any give point in context.   |
|  |  | 9: I can use the tangent line of a function to approximate function values in context.  |

## Compute Derivatives

|  |  |   |
|--|--|---|
|  |  | 10: I can compute derivatives of polynomials, exponential functions, and logarithmic functions. |
|  |  | 11: I can compute derivatives of trigonometric and anti-trigonometric functions.                |
|  |  | 12: I can compute derivatives using the product rule.   |
|  |  | 13: I can compute derivatives using the quotient rule.  |
|  |  | 14: I can compute derivatives using the chain rule.   |
|  |  | 15: I can find derivatives of inverse functions.  |
|  |  | 16: I can find derivatives using implicit differentiation.                                      |

## Apply Derivatives

|  |  |  |
|--|--|--|
|  |  | 17: I can use derivatives to find local extreme values.  |
|  |  | 18: I can use derivatives to find global extreme values. |
|  |  | 19: I can solve related rates problems.                  |
|  |  | 20: I can solve optimization problems.                   |