USD 368
Curriculum Guide

***KS Assessment**

Curricular Area **Math**
Grade/Course **Calculus/Basic Calculus**
Standard 1: Limits
Benchmark

Indicator

1. Continuity: Find left and right hand limits.
2. Limit of function: Find the limit of functions.
3. Infinity and limit: Find undefined limits.

Standard 2: 1st Derivative
Benchmark

Indicator

1. Formal definition: Derive formal definition of 1st derivative.
2. Power rule: Use power rule to calculate 1st derivative.
3. Four special derivatives: Find 1st derivative of sin *x, cos* x, ln *x,* and e^x.
4. Differential: Find 1st differential of equations.
5. Product rule: Find 1st derivative of products.
6. Implicit differentiation: Differentiate implicitly.
1. Critical numbers: Find critical points using 1st derivative.
8. Quotient rule: Find 1st derivative of quotients.
9. Chain rule: Find 1st derivative rule using chain rule.
10. Inflection points: Use 2nd derivative to find points of inflection.
11. Max and min problems: Use 1st derivative to find max and min of functions.
12. Inverse functions: Find 1st derivative of inverse trig functions.
13. a^x, $\log_a x$: Find 1st derivative of a^x, and $\log_a x$.

Standard 3: Integration
Benchmark

Indicator

1. Antiderivative: Use integration to antidifferentiate.
2. Power rule: Use power rule to integrate.
3. Fund Theorem of Calculus: Use to integrate definite integrals.
4. Area under curve: Use integration to find area under a curve.
5. Integration by guessing: Use guessing to integrate.
6. Riemann sum: Use to integrate a function.
7. Area between curves: Use integration to find area between two curves.
8. Integration by parts: Integrate by parts
9. Solids of revolution: Use integration to find volume by disk method.
10. Fluid force: Use integration to calculate fluid force.
11. Solids of revolution: Use integration to find volume by washer method.
12. Solids of revolution: Use integration to find volume by shell method.

Standard 4: Analytical Geometry
Benchmark

Indicator

2. Conic sections: Use locus definitions to find lines, circles, parabolas, ellipses, and hyperbolas.

3. Tangent lines: Use 1st derivative to find equations of tangent lines.

4. Rational functions: Graph rational functions
5. Velocity and acceleration: Calculate motion due to gravity.

6. Falling body problems: Find velocity and acceleration.

7. Balance points: Find using calculus.
8. Centroids: Find using calculus.
9. Particle motion: Find velocity and acceleration.