

VECTOR CALCULUS & ANALYTIC GEOMETRY MADE EASY - FUNCTIONALITY

for the TiNspire CAS – www.TiNspireApps.com

Vectors

- Read about Vectors
- All in one Vector Explorer
- Find Norm
- All in one 2-Vectors Explorer
- Test of Orthogonality
- Find Angle between 2 Vectors
- Test of In/Dependence
- Projection of A to B
- Distance A to B
- Find Cross Product
- Find Orthogonal 3D Vector
- Limit & Differentiation & Integration

Analytic Geometry

- Find Plane given 3 3D Vectors
- Find Line perpendicular to Plane
- Find Distance Point to Plane
- Intersection: Line & Line
- Intersection: Line & Plane
- Intersection: Plane & Plane
- Tangent and Unit Tangent Vector
- Intersection of 2 Space Curves

Vectors & Derivatives

- Gradient Vector Field
- Laplacian of Scalar Field
- Is a 2D Vector Field conservative?
- Find Potential Function of F
- Curvature of Curve
- Torsion of Curve
- Divergence of a 3D Vector Field
- Curl of a 3D Vector Field
- Vector Differentiation

Vectors & Integrals

- Arc Length of Space Curve
- Definite Integral of Vector Function
- Find Parametrization given 2 Points
- Fundamental Theorem of Calculus given 2 Pts
- Fundamental Theorem of Calculus given Line

Line Integral over Curve C
Area under Param. Curve using Line Integral
Line Integral given Function & Parametrization
Line Integral given Function & 2 Points
Line Integral given Vector Field & Parametriz.
Work done by Force Field & Parametrization
Greens Theorem
Surface Integral: Function & Parametrization
Surface Integral: Vector Field & Parametrizat.
Divergence Thm: Rectangular Coordinates
Stokes' Theorem with t-Parametrization
Stokes' Theorem with x-y-Param. & Curl
Vector Integration

Multivariable Calculus

Limits
Partial Derivatives and Gradient
Relative Extrema
Chain Rule
Tangent Plane
Normal Line & Unit Normalvector
Lagrange Multiplier - 1 Constraint
Lagrange Multiplier - 2 Constraints
Directional Derivative
Hessian Matrix of
Multiple Integrals
Laplace Transforms

Linear Algebra

Row Echolon
Reverse Row Echolon
Gauss Elimination
Find EigenValues
Find EigenVectors
Find Orthonormal Basis
Gram Schmidt Procedure
Find Area of Parallelogram
Find Volume of Parallelepiped
Is B a Linear Combination of A1
Span of Vectors

Motion & Vector Valued Functions

Given Position $s(t)=(x(t))$
Given Velocity $v(t)=(x'(t))$
Find Curve Length given $v(t)=(x'(t))$
3D: Unit Vector
Parametric Equation of Line passing through 2 Vectors
Parametric Equation of Plane passing through 3 Vectors

Parametric Equations

- Eliminate Parameter
- Evaluate and Derivatives
- Find Tangents
- Curve Length
- Enclosed Area
- Volume of Solids
- Surface Area of Solids

Conversions

- Polar Coordinates \leftrightarrow (x,y)
- Convert 3D Coordinates

Help & About

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