

CALCULUS WITH PHYSICS APPLICATIONS - FUNCTIONALITY

for the TiNspire CAS CX – www.TiNspireApps.com

Physics Apps

Center of Mass (2D)

1. Moment of Mass about x and y-axis

Mass of Lamina - $f(x)$

Mass of Lamina - $f(y)$

Radius of Gyration (x-axis)

Radius of Gyration (y-axis)

1. & 2. & 3. Moment of Inertia about x-axis

1. & 2. & 3. Moment of Inertia about y-axis

3 Moments of Inertia of a Solid

Mass of a Solid

Moments of Mass of Solid (3D)

Center of Mass of Solid (3D)

Heat Transfer

Hydrostatic Force

Work= Integral of Force

Fluid Force

Functions

READ: Linear Functions

Find Slope

Find $y=mx+b$

All-in-one-Function Explorer

Evaluate Function

Find Domain of $f(x)$

Find Range of $f(x)$

Intersection of 2 Functions

Composition of 2 Functions $f(g(x))$

Do the Quadratic Equation

Complete the Square

Find $[f(x+h)-f(x)]/h$

Find Inverse function

READ: Interval Notation

Newton Method

READ: Intermediate Value Theorem

Limits

READ: Limit Rules

L'Hopital Rule $0/0$ or ∞/∞

Compute 1- and 2-sided Limits

Continuity of piecewise-defined function

READ: Definition of 2-Sided Limit & Continuity

READ: Definition of Continuity

Derivatives

Find $[f(x+h)-f(x)]/h$

Average Rate of Change

Find $f'(x)=\lim [f(x+h)-f(x)]/h$ as $h \rightarrow 0$

Instantaneous Rate of Change

Evaluate Derivatives; Tangent- & Normalline

Find Point Slope & $y=mx+b$ given Pt & Slope

READ: Differentiation Rules

Step by Step Differentiation

Higher Derivatives with Evaluation

Critical Points

Points of Inflection & Concavity

Mean Value Theorem

Rolle's Theorem

Implicit Differentiation

Slope of Inverse Function

All in one Rate Explorer

Differentiability of piecewise-defined function

Absolute and Percent Change

Differentials

APPS: Max Volume of Folded Box

APPS: Min Distance Point to Function $f(x)$

APPS: Related Rates Find dy/dt

Integrals

READ: Integration Rules

Step by Step Integration

Find Antiderivative & Constant of Integration: $\int f(x)dx + C$

Definite Integrals (Netarea)

1. Fundamental Theorem of Calculus

2. Fundamental Theorem of Calculus

Average Value Theorem

Find Total Area $\int |f(x)| dx$

Find Enclosed Area $\int U(x)-L(x)dx$

Area Approx. LRAM

Area Approx. LRAM

Integration of Piecewise defined Function

Compute $\int (\text{Rate})dt$

APPS: CURVE LENGTH of $f(x)$ $\int (1+f'(x)^2)dx$

APPS: VOLUME - Disk Method about x-axis

APPS: VOLUME - Washer Method about x-axis

APPS: VOLUME - Shell Method about y-axis

APPS: VOLUME - Washer Method about y-axis

APPS: VOLUME - Known Cross Sections

APPS: SURFACE AREA (x and y-axis)

READ: Integration by Trig Substitution

Differential Equations

Solve any 1. order Differential Equation

Separation of Variables

Euler Method

Solve any 2nd order Differential Equations

Horizontal & Vertical Motion

Given Position $s(t)$

Given Velocity $v(t)$

Given Acceleration $a(t)$

Sequences & Series

Explicit Sequence & Partial Sum

Recursive Sequence & Partial Sum

Sequence Formula Finder

Sigma S-Notation

Geometric Series & Convergence Test

Nth Term Test for Divergence

Integral Test

p-Series Test

Alternating Series Test

Ratio Test

Find Sum and Partial Sums

Develop Taylor Series using Definition

Taylor Series with Error Bound

Compose 2 Taylor Series

Parametric Equations

Evaluate and Derivatives

Tangents

Curve Length

Enclosed Area

Volume of Solids

Surface Area of Solids

Vectors & Vector Valued Functions

READ: Vector Rules

2D: Vector Length

Given Position $s(t)=(x(t))$

Given Velocity $v(t)=(x'(t))$

3D: Unit Vector

Polar Equations

Polar Coordinates $\rightarrow (x,y)$

READ: Symmetry of Polar Equations

Find Intersection of Polar Functions

Evaluate and Differentiate $d\theta/dr$

Find dy/dx

Find Tangent Line

Horizontal and Vertical Tangents

Area

Curve Length

Find Angle θ given x and $r(\theta)$

Find Angle θ given y and $r(\theta)$

Multivariable Calculus

Partial Derivatives and Gradient

Relative Extrema of $f(x)$

Directional Derivative

Multiple Integrals: $\iint f(x,y)dydx$

Multiple Integrals: $\iiint f(x,y,z)dzdydx$

Convert 3D Coordinates

Laplace Transforms

Algebra & Trigonometry

Solve any Equation or Inequality

Intersection of 2 Functions

Simplify Expression

Factor

Expand/Distribute

Partial Fractions

READ: Intro

Convert Degree \leftrightarrow Radian

Evaluate Trig Functions

READ: Trig Identities

READ: Hyperbolics

READ: TRIG-DERIVATIVES

READ: TRIG-INTEGRALS

READ: Unit Circle: Angles & Coordinates

READ Circle Properties & Formulas

Find Circle Sector

Exponents & Logarithms

READ: Exponents & Rules

Solve any Equation

Solve using the Rule 72

Solve Money/Exponential Growth Problems

READ: Logarithms & Rules

Evaluate Logarithms

Logarithm Solver

Change of Base

Help & About

Help & Use of Keys

What to Input

About us

Set FontSize