

OPERATIONS RESEARCH MADE EASY - FUNCTIONALITY

for the TiNspire CAS – www.TiNspireApps.com

Logic

- Read Truth Tables
- Read Proposition Laws
- Read Conditional
- Read BiConditional
- Read Set Theory: 10 Facts
- Read Set Theory: 9 Laws

Algebra

- Solve any Equation or Inequality
- Solve 2x2 system - Step by Step
- Simplify & Evaluate
- Factor
- Powers
- Expand/Distribute
- Find GCD & LCM
- Find Common Denominator
- Find Proper Fractions
- Solve Proportion (Ratio) Problems
- Absolute and Percent Change

Functions

- Read: Definition of Function
- All-in-one-Function Explorer
- Evaluate Function
- Find Domain of $f(x)$
- Find Range of $f(x)$
- Intersection of 2 Functions
- Find $f+g$
- Composition of 2 Functions $f(g(x))$
- Find $[f(x+h)-f(x)]/h$
- Find Inverse function
- Interval Notation

Polynomials & Sequences

- All-in-one-Polynomial Explorer
- Find Degree
- Find Roots
- Polynomial Division & Remainder
- Synthetic Division
- Explicit Sequence & Partial Sum
- Recursive Sequence & Partial Sum

Sequence Formula Finder
Geometric Sequence & Series
Arithmetic Sequence

Points and Lines

Find Slope
Find $y=mx+b$
Read: $y=k*x$
Read: Linear Functions
Find Point Slope & $y=mx+b$ given Pt & Slope
Check if 2 Lines are Parallel or Perpendicular
Find Parallel and Perpendicular Lines
Read: Absolute Value Function $|x|$

Quadratic Equations and Complex Numbers

Do the Quadratic Equation
Complete the Square
Complete the Square to find Zeros
Complete the Square to find Vertex
One Complex Number : All-in-one-Explorer
Two Complex Numbers : All-in-one-Explorer

Combinatorics

$n_1*n_2*n_3*..$ = Multiplication Principle
 $n!$ = Number of Rearrangements
 nPr = Number of ways to rearrange r given n
 nCr = Number of ways to pick r given n
 n^r = Number of ways to rearrange n items repeated r times
 $(n+r-1)!/((n-1)!*r!)$ = Select r given n w. repetition
Binomial Coefficients & Pascal Triangle

Probability & Expected Value

Read: Introduction & Examples
Read: Rules & Properties
Odds \leftrightarrow Probability
Conditional Probability
Expected Value: Find μ and s
Read: Cards
Read: Dice
Read: Marbles
Read: Coins
 $P(A \text{ or } B)=P(A)+P(B)-P(A \text{ and } B)$
Check if A and B are dependent or disjoint
 $P(A \text{ or } B \text{ or } C)$

Vectors

- Read: Introduction to Vectors
- All-in-one-1-Vector Explorer
- Norm
- All-in-one-2-Vector Explorer
- Test of Orthogonality & Angle between A and B
- Projection A to B
- Test of (In)Dependence
- Cross Product finds perpendicular Vector
- Find Orthogonal 3D Vector

Matrices

- All in one Matrix A Explorer
- Two Matrices: $A+B$
- Find the Inverse of A
- Find the Determinant of A
- Simplex Algorithm
- Leontief Model
- Row Echolon(A)
- Reverse Row Echolon(A) - STEPS
- Solve System of Equations $A*X=B$
- Cramer Rule to solve $A*X=B$

Markov Chains & Stochastic Matrices

- Stochastic and Regular Stochastic Matrix
- Probability Vector
- Terminal State & Fixed Probability Vector
- Find A^n
- n th State of a Markov Chain: $p_0 * A^n$

Linear Programming

- Find Maximum
- Find Minimum
- Simplex Algorithm

Business

- Marginal Profit
- Marginal Revenue
- Demand Analysis
- Simplex Algorithm
- Find Equilibrium of Supply & Demand

Game Theory

- Read Introduction & Applications
- Read Symmetric vs Non-Symmetric Games

[Read Cooperative vs Non-Cooperative Games](#)
[Read Zero-Sum Games](#)
[Read Simultaneous vs Non-Simultaneous Games](#)
[Read Symmetric vs Non-Symmetric Games](#)
[Read Prisoners Dilemma](#)
[Read Strictly Determined Games](#)
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