Complex Operations

MINIMUM SIZE 005

ARITHMETIC

Key in first complex number $(x_1 + iy_1)$. V1 ENTER+ X1 ENTER+

Key in second complex number $(x_2 + iy_2)$.

V₂ENTER+ X₂

XEQ C+

XEQ C-

XEQ CX × ÷ XEQ C÷

FUNCTIONS



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zw	y_2 (ENTER+) x_2 (ENTER+) y_1 (ENTER+)
	X1 XEO Z↑W R/S
$z^{1/w}$	y_2 ENTER+ x_2 ENTER+ y_1 ENTER+
	X1 XEO Z1/W R/S
sin z	y1 ENTER X1 XEQ SINZ R/S
cos z	y1 ENTER+ X1 XEQ COSZ R/S
tan z	y1 ENTER X1 XEQ TANZ R/S

Hyperbolics MINIMUM SIZE 001

SI

tz

nh x	X XEQ SINH
osh x	X XEQ COSH
nh x	X XEQ TANH
nh-1x	X XEQ ASINH
osh⁻¹x	X XEQ ACOSH
nh⁻¹x	X XEQ ATANH

Triangle Solutions MINIMUM SIZE 008 All sides known **XEO** SSS Two angles and included side known XEQ ASA Two angles and adjacent side known XEQ SAA Two sides and included angle known XEQ SAS

Two sides and adjacent angle known XEQ SSA

After prompts are answered, results are output with successive use of [R/S].

Coordinate Transformations MINIMUM SIZE 025 Initialize program. **XEO** TRANS 2-DIMENSION Input origin and rotation angle.

 x_0 ENTER+ y_0 ENTER+ θ A

Transform coordinates to translated-rotated system. x ENTER+ y C R/S

Transform coordinates to original system χ' ENTER+ χ' E R/S

3-DIMENSION



x' ENTER+ y' ENTER+ z' E R/S R/S

HP-41C Math Pac I **Ouick Reference Card**

Matrix Operations

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Initialize program. **XEO** MATRIX Key in order of matrix ($N \le 14$); press **R/S**. Set size and continue. Input elements of matrix in row order (Aij); press **R/S** Repeat previous step until all elements have been keyed in. View the matrix. **XEO** VMAT Edit the matrix. **XEO** EDIT Input row and column of element to be changed [ENTER+] J R/S] Key in new value A_{ii} **R/S** To stop editing **R/S R/S**

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Compute determinant. **XEQ** DET

Find inverse. **XEO** INV

Press **R**/**S** for results in column order. For simultaneous equations **XEO** SIMEQ Input column matrix. B₁ **R**/**S** Press **R**/**S** for remaining inputs and results. View the column. **XEO** VCOL

Solution to f(x) = 0 on an Interval

MINIMUM SIZE 007

Key in function under desired label.

RTN

PRGM

GTO • •

Initialize program. **XEO** SOLVE

Key in function name; press **R/S**

If you wish to provide 2 guesses, key in first guess; press \mathbb{R}/\mathbb{S} .

Otherwise, press **R/S** alone.

Key in second guess; press **R/S**.

Polynomial Solutions/ Evaluation MINIMUM SIZE 023 Initialize program. **XEQ** POLY Key in degree of polynomial (n=2,3,4,5): press R/S Input coefficients of polynomial (a_i); press R/S Repeat previous step until display says ROOTS? To find roots of polynomial, press **R/S**. To evaluate polynomial answer no (N); press R/S Input x and press \mathbb{R}/\mathbb{S} to see f(x). For new x, key in x, press \mathbb{R}/S . For a new polynomial of same degree, change coefficients $(R_{00}-R_{04})$ and **XEO** ROOTS. Numerical Integration MINIMUM SIZE 008 **Discrete Case**

Initialize program. $\fbox{E0}$ INTG Key in spacing between x-values; press A. Key in function value at x_j ; press B. Repeat for j=0,1, ..., n.

Compute area by trapezoidal rule. C	Ini
Compute area by Simpson's rule.	Ke
Explicit Functions	Ke
Key in function GTO • •	pre
under desired label.	Ke
LBL _	Inp
	Inp
:	Fo
RTN	pre
PRGM	Ou
Initialize program. [XEQ] INTG	E
Key in beginning and final endpoints of integra- tion interval. $a = b = A$	м
Key in number of subintervals, and	Ini
compute area by Simpson's rule.	Ke
Key in function name; press R/S .	pre
To change a, b, or n, go to the appropriate step.	Ke R/S
Differential Equations	Ke
	Inp
	Re
Key in function GTO ••	RE
	То
· · ·	pre
	po. te
RTN	To
PRGM	mo

Initialize program. **XEO DIFEQ** Key in function name; press(**R**/**S**). Key in order of differential equation (1 or 2); press(**R**/**S**). Key in step size; press(**R**/**S**). Input initial x; press(**R**/**S**). Input initial y; press(**R**/**S**). For second-order solution key in initial y'; press(**R**/**S**). Output successive values of x and y with **R**/**S**).

Fourier Series

Initialize program. **XEO** FOUR Key in number of samples in one period; press n/s. Key in number of frequencies desired; press n/s. Key in order of first coefficient; press n/s. Input y_n, n=1,...,N; press n/s.

Repeat previous step until display shows **RECT?**

To display coefficients in rectangular form, press \mathbb{R}/\mathbb{S} . To display coefficients in polar form, key in N; press \mathbb{R}/\mathbb{S} . Press \mathbb{R}/\mathbb{S} to display successive coefficients.

To compute value of series at t, set USER mode, key in t, press \boxed{E} .