

VECTOR	Vector menu					
g-shift	⇨DEG	⇨RAD	⇨MUL π		$\vec{v}_2[10]$	$\vec{v}_2[01]$
f-shift	$\ x\ _p$	UNITV	$\ \vec{x}-\vec{y}\ _2$	$\times \vec{x}, \vec{y}$	dot	cross
unshifted	⇨R	⇨P	$\mathbb{C} \leftrightarrow \vec{v}_2$	$y \times \leftrightarrow \vec{v}_2$	$\vec{v} \leftarrow \vec{v}$	CLSTK
Page 2	F1	F2	F3	F4	F5	F6

Prev menu https://47calc.com/doc/R47/Menus/R47v0_Menu_VECTOR_page_1.pdf

Next menu https://47calc.com/doc/R47/Menus/R47v0_Menu_Volume_page_1.pdf

Ref 1 https://47calc.com/doc/R47/Reference/R47v0_Vector_display.pdf

Level	Label	Type	FullName	Extended description	Category	Flag	Catalog	Default
Menu p2	VECTOR	MENU	Vector menu	Vector functions ; Ref : https://47calc.com/doc/R47/Reference/R47v0_Vector_display.pdf ; Info : Vectors are stored internally as rectangular and calculation results are presented in rectangular format ; to edit a vector, first put it in rectangular format ; vector TI's are shown for values in X only and a small font may be used ; vector TI's are minimised if the stack changes or [EXIT] is pressed (only ijk or r0k or p0φ is shown, without subscripts or brackets)	Vector operations		VECTOR	
F1	→R	Function (monadic, dyadic)	To rectangular	Transform polar to rectangular coordinates (dyadic, stack conventions according to flag RPH SET or CLEAR) ; transform Complex number or 2D/3D vector to rectangular notation (monadic) and set RECT tag ; TI : x : Re = ; y : Im = (RECT) ; Info : in Program Entry Mode, flag RPH determines whether →RECT _{hp} or →RECT _{ex} is stored ; vector display depends on flag 3Dxyz, for 2D rectangular vector : [ij] [v ₁ v ₂] ; 3D rectangular vector : [ijk] [v ₁ v ₂ v ₃]	Complex and coordinates	RPH	→RECT	
F2	→P	Function (monadic, dyadic)	To polar	Transform rectangular to polar coordinates (dyadic, stack conventions according to flag RPH SET or CLEAR) ; transform Complex number or 2D/3D vector to polar notation (monadic) and set POLAR tag ; TI : r = ; θ = (POLAR) ; Info : in Program Entry Mode, flag RPH determines whether →POL _{hp} or →POL _{ex} is stored ; for a 3D vector in X, function →POLAR (→P) cycles through →SPH, then →CYL ; vector display depends on flag 3Dxyz, for 2D polar vector : [r0;ij] [v ₁ v ₂] ^p ; 3D spherical vector : [p0;ijk] _M [v ₁ v ₂ v ₃] ^a ; 3D cylindrical vector : [r0;ijk] [v ₁ v ₂ v ₃] ^c	Complex and coordinates	RPH	→POLAR	
F3	ℂ↔v ₂	Function (monadic)	Complex to or from 1x2 vector	Convert Complex number to or from 1x2 vector ; Info : Display depends on flag 3Dxyz, for rectangular vector : [ij] [v ₁ v ₂]	Vector operations	3Dxyz	ℂ↔v ₂	
F4	yx↔v ₂	Function (dyadic, nonpgm)	Compose/decompose 1x2 vector	Compose/decompose 1x2 vector from/to Y, X ; tagged angles in the input will be recognized and the appropriate coordinate tag will be applied to the vector ; Info : Display depends on flag 3Dxyz, for rectangular vector : [ij] [v ₁ v ₂] ; rectangular elements : [i]= ; [j]= ; polar vector : [r0;ij] [v ₁ v ₂] ^p ; polar elements : [r]= ; [θ;ij]=	Vector operations	3Dxyz	yx↔v ₂	
F5	v̄↔→v̄	MENU	Vector conversions	Vector conversion functions ; Ref : https://47calc.com/doc/R47/Reference/R47v0_Vector_display.pdf ; Info : Vectors are stored internally as rectangular and calculation results are presented in rectangular format ; to edit a vector, first put it in rectangular format ; vector TI's are shown for values in X only and a small font may be used ; vector TI's are minimised if the stack changes or [EXIT] is pressed (only ijk or r0k or p0φ is shown, without subscripts or brackets)	Vector operations		v̄↔→v̄	
F6	CLSTK	Command	Clear stack	Clear stack registers : when stack size is 8, clears XYZT ABCD ; when stack size is 4, clears XYZT ; if setting iLI is ON, the stack is filled with 0 (Long integers) ; when used while plotting, CLSTK returns to the normal screen as the stack is expected to show, implying an exit from graph and other modes ; Shortcut : longpress [+]; SBI : 8 ; 4	Cleanup	SSIZE8	CLSTK	
fF1	x _p	Function (monadic)	Norm	Norm of vector or matrix in X with parameter p (trailing input) = 0, 1, 2, ..., 9, ∞ : 0 : Number of non-zeros of vector or matrix in X : x ₀ = Σ _i I(a _i ≠0), where I is the indicator function, 1 if true, 0 if false ; 1 : Maximum column sum of absolute element values of a matrix in X : x ₁ = max _i Σ _j a _{ij} ; 2 : Euclidean magnitude of a vector in X or Frobenius norm of a matrix in X : x ₂ = √Σ _j Σ _i a _{ij} ² ; 3 : x ₃ = √Σ _j Σ _i a _{ij} ³ ; ... ; 9 : x ₉ = √Σ _j Σ _i a _{ij} ⁹ ; ∞ : Maximum row sum of absolute element values of a matrix in X : x _∞ = max _j Σ _i a _{ij} ; TAM : x _p _ TamNorm menu ; Info : parameter 0, 1, 2, ..., 9, ∞ (use [TamNorm.1] F2 to enter ∞)	Matrix operations		x _p	
fF2	UNITV	Command	Unit vector or matrix	Unit vector or matrix for Real or Complex matrix or vector ; the result will have Euclidean magnitude 1 ; Info : UNITV also applies to Complex numbers	Complex numbers		UNITV	
fF3	x̄-ȳ ₂	Function (dyadic)	Perpendicular distance	Perpendicular distance between Real matrices or vectors ; Complex matrices or vectors	Vector operations	3Dxyz	x̄-ȳ ₂	
fF4	↷x̄,ȳ	Function (dyadic)	Vector angle	Angle between the 2D or 3D vectors in X and Y	Matrix operations	3Dxyz	↷x̄,ȳ	

Level	Label	Type	FullName	Extended description	Category	Flag	Catalog	Default
fF5	dot	Function (dyadic)	Dot product (·)	Dot product of vectors in X and Y	Complex numbers		DOT	
fF6	cross	Function (dyadic)	Cross product (×)	Cross product of vectors in X and Y	Complex numbers		CROSS	
gF1	→DEG	Function (monadic)	Set DEG tag or convert to DEG	If untagged, set tag to DEG (degrees) ; if tagged, convert X to DEG ; does not change Angular Display Mode ; Tag : °	Angle tagging or conversion		→DEG	
gF2	→RAD	Function (monadic)	Set RAD tag or convert to RAD	If untagged, set tag to RAD (radians) ; if tagged, convert X to RAD ; does not change Angular Display Mode ; Tag : °	Angle tagging or conversion		→RAD	
gF3	→MULπ	Function (monadic)	Set MULπ tag or convert to MULπ	If untagged, set tag to MULπ (multiple of pi radians) ; if tagged, convert X to MULπ ; does not change Angular Display Mode ; Tag : π°	Angle tagging or conversion		→MULπ	
gF4								
gF5	$\vec{v}_2[10]$	Command	Unit vector [1 0]	Create a new 2D unit vector with elements [1 0] ; Info : Display depends on flag 3Dxyz, for rectangular vector : [ij] [v ₁ v ₂]	Vector operations	3Dxyz	$\vec{v}_2[10]$	
gF6	$\vec{v}_2[01]$	Command	Unit vector [0 1]	Create a new 2D unit vector with elements [0 1] ; Info : Display depends on flag 3Dxyz, for rectangular vector : [ij] [v ₁ v ₂]	Vector operations	3Dxyz	$\vec{v}_2[01]$	

p2	VECTOR	Link
F1	$\rightarrow R$	
F2	$\rightarrow P$	
F3	$\mathbb{C} \leftrightarrow \vec{v}_2$	
F4	$y \times \leftrightarrow \vec{v}_2$	
F5	$\vec{v} \leftrightarrow \rightarrow \vec{v}$	https://47calc.com/doc/R47/Menu/R47v0_Menu_VectorConv_page_1.pdf
F6	CLSTK	
fF1	$\ x\ _p$	
fF2	UNITV	
fF3	$\ \vec{x} - \vec{y}\ _2$	
fF4	$\angle \vec{x}, \vec{y}$	
fF5	dot	
fF6	cross	
gF1	$\rightarrow \text{DEG}$	
gF2	$\rightarrow \text{RAD}$	
gF3	$\rightarrow \text{MUL}\pi$	
gF4		
gF5	$\vec{v}_2[10]$	
gF6	$\vec{v}_2[01]$	