

XFCNS	Extended functions					
g-shift	X↔XFN	XDRG	XATAN2	XASIN	XACOS	XATAN
f-shift	DEG ◐	RAD ◐	Xπ	XSIN	XCOS	XTAN
unshifted	X↔DEG	X↔RAD	XADD	XSUB	XMULT	XDIV
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Prev menu https://47calc.com/doc/R47/Menus/R47v0_Menu_X-FN_page_3.pdf

Next menu https://47calc.com/doc/R47/Menus/R47v0_Menu_XFCNS_page_2.pdf

Ref 1 https://47calc.com/doc/R47/Reference/R47v0_Datatypes.pdf

Ref 2 https://47calc.com/doc/Application%20Notes/AN0016_C47_R47_The_1000_digit_issue.pdf

Level	Label	Type	FullName	Extended description	Category	Flag	Catalog	Default
Menu p1	XFCNS	MENU	Extended functions	Extended accuracy functions for compounded input from three or six consecutive registers, effectively to 1000 digits for new models and simulator, but function not available on DM42 hardware ; when working from the stack, the compound result overwrites X, Y, Z, but when working from other registers, the compound result is pushed onto the stack ; Y will contain Long integer ; when menu XFCNS is open, setting HIDE is ignored ; Split screen : Displaying $X \times Y + Z = \langle \text{value} \rangle$ and $T \times A + B = \langle \text{value} \rangle$ (or "Invalid register type/angle") when menu XFCNS is open (on new stack input, using ALL notation ; Info : extended accuracy functions are defined for (compound) real input and output only, or will result in NaN (Not a Number) or Error 31 -- Input data types do not match ; when menu XFCNS is open, if XYZ contains result in Virtual compound data type, SHOW displays $X : XY + Z = \langle \text{value} \rangle$ and ditto for T : $TA + B$ and for the dedicated triple register storage, e.g. R90 : FMA: (fused multiply-add) ; Ref : https://47calc.com/doc/R47/Reference/R47v0_Datatypes.pdf	Extended accuracy		XFCNS	
F1	X→DEG	Function (monadic, XFN)	XFN : Set DEG tag or convert to DEG	Extended accuracy function : Set DEG tag or convert to DEG, for compound input from three consecutive stack registers, operates on X ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI $\times$ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		X→DEG	
F2	X→RAD	Function (monadic, XFN)	XFN : Set RAD tag or convert to RAD	Extended accuracy function : Set RAD tag or convert to RAD, for compound input from three consecutive stack registers, operates on X ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI $\times$ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		X→RAD	
F3	XADD	Function (dyadic, XFN)	XFN : Add	Extended accuracy function : Add, for compound input from six consecutive stack registers : $(T \times A + B) + (X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XADD to [+] in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI $\times$ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XADD	
F4	XSUB	Function (dyadic, XFN)	XFN : Subtract	Extended accuracy function : Subtract, for compound input from six consecutive stack registers : $(T \times A + B) - (X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XSUB to [-] in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI $\times$ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XSUB	
F5	XMULT	Function (dyadic, XFN)	XFN : Multiply	Extended accuracy function : Multiply, for compound input from six consecutive stack registers : $(T \times A + B) \times (X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XMULT to [x] in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI $\times$ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XMULT	
F6	XDIV	Function (dyadic, XFN)	XFN : Divide	Extended accuracy function : Divide, for compound input from six consecutive stack registers : $(T \times A + B) / (X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XDIV to [:] in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI $\times$ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XDIV	
fF1	DEG °	Setting (pgm)	Set ADM to DEG	Set Angular Display Mode to degrees mode (ADM = 0) ; Info : SBI ° is shown if flag SBadm is SET ; SBI $\angle$ is shown if flag SBang and SBadm is SET ; SBI : °	Angle tagging or conversion	SBadm	DEG °	ON
fF2	RAD °	Setting (pgm)	Set ADM to RAD	Set Angular Display Mode to radians mode (ADM = 2) ; Info : SBI $\angle$ is shown if flag SBang and SBadm is SET ; SBI : °	Angle tagging or conversion	SBang	RAD °	OFF

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fF3	X π	Command (XFN)	XFN : π	Extended accuracy command : X π , to push π onto the stack as a Virtual compound data type triplet with factor 1 of $1. \times 10^{-999}$ in X, factor 2 of 1000 digits of π as 0/1.0 ; 0/1.0 ; Long integer in Y and term of 0. in Z ; load state file STATE/xfnToR47user.s47 to assign X π to f[R $\downarrow$] (π) in USER mode ; Info : SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		X π	
fF4	XSIN	Function (monadic, XFN)	XFN : Sine	Extended accuracy function : Sine, for compound input from three consecutive stack registers : SIN(X $\times$ Y + Z) ; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XSIN to f[7] (SIN) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; displays : Taylor Iter: m/1000; Dig: n/1040, where m is iteration counter, n is number of digits, shown if flag MONIT is SET ; function not available on DM42 hardware	Extended accuracy		XSIN	
fF5	XCOS	Function (monadic, XFN)	XFN : Cosine	Extended accuracy function : Cosine, for compound input from three consecutive stack registers : COS(X $\times$ Y + Z) ; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XCOS to f[8] (COS) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; displays : Taylor Iter: m/1000; Dig: n/1040, where m is iteration counter, n is number of digits, shown if flag MONIT is SET ; function not available on DM42 hardware	Extended accuracy		XCOS	
fF6	XTAN	Function (monadic, XFN)	XFN : Tangent	Extended accuracy function : Tangent, for compound input from three consecutive stack registers : TAN(X $\times$ Y + Z) ; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XTAN to f[9] (TAN) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; displays : Taylor Iter: m/1000; Dig: n/1040, where m is iteration counter, n is number of digits, shown if flag MONIT is SET ; function not available on DM42 hardware	Extended accuracy		XTAN	
gF1	X $\rightarrow$ XFN	Command (XFN)	XFN : Convert X to compound	Extended accuracy functionVirtual compound data type (0/1.0-1.5 ; 0/1.0 ; 0/1.0) : Convert X to Virtual compound data type (1.0-1.5 ; 0 ; 1.0) triplet in X, Y, Z ; load state file STATE/xfnToR47user.s47 to assign X $\rightarrow$ XFN to g[R $\downarrow$] (R $\uparrow$) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		X $\rightarrow$ XFN	
gF2	XDRG	Function (monadic, cyclic, nonpgm, XFN)	XFN : Degrees-radians-gradians	Extended accuracy function : Degrees-radians-gradians, for compound input from three consecutive stack registers : DRG(X $\times$ Y + Z) ; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XDRG to [DRG] in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XDRG	
gF3	XATAN2	Function (dyadic, XFN)	XFN : Expanded inverse tangent	Extended accuracy function : Expanded inverse tangent, for compound input from six consecutive stack registers : ARCTAN{(T $\times$ A + B) / (X $\times$ Y + Z)} ; returns compound result in X, Y, Z, where Y contains Long integer (0) ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; displays : Taylor Iter: m/1000; Dig: n/1040, where m is iteration counter, n is number of digits, shown if flag MONIT is SET ; function not available on DM42 hardware	Extended accuracy		XATAN2	

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gF4	XASIN	Function (monadic, XFN)	XFN : Arc sine	Extended accuracy function : Arc sine, for compound input from three consecutive stack registers : $\text{ARCSIN}(X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XASIN to g[7] (ASIN) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI $\bar{x}$ is displayed during calculation ; displays : Taylor Iter: m/1000; Dig: n/1040, where m is iteration counter, n is number of digits, shown if flag MONIT is SET ; function not available on DM42 hardware	Extended accuracy		XASIN	
gF5	XACOS	Function (monadic, XFN)	XFN : Arc cosine	Extended accuracy function : Arc cosine, for compound input from three consecutive stack registers : $\text{ARCCOS}(X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XACOS to g[8] (ACOS) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI $\bar{x}$ is displayed during calculation ; displays : Taylor Iter: m/1000; Dig: n/1040, where m is iteration counter, n is number of digits, shown if flag MONIT is SET ; function not available on DM42 hardware	Extended accuracy		XACOS	
gF6	XATAN	Function (monadic, XFN)	XFN : Arc tangent	Extended accuracy function : Arc tangent, for compound input from three consecutive stack registers : $\text{ARCTAN}(X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XATAN to g[9] (ATAN) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI $\bar{x}$ is displayed during calculation ; displays : Taylor Iter: m/1000; Dig: n/1040, where m is iteration counter, n is number of digits, shown if flag MONIT is SET ; function not available on DM42 hardware	Extended accuracy		XATAN	