TI–85 and TI–86 PROGRAM: SIMPSON'S RULE & TRAPEZOIDAL RULE
(remember to press ENTER at end of each line)

KEY IN	DISPLAY	EXPLANATION
PRGM EDIT SIMPSON	Prgm : SIMPSON	Program named "SIMPSON"
I/O Disp "ααLOWERLIMIT"	Disp "LOWERLIMIT"	Lower limit of integration
Input αA	Input A	After ?, type in the lower limit of integration
I/O Disp "ααUPPERLIMIT"	Disp "UPPERLIMIT"	Upper limit of integration
Input αB	Input B	After ?, type in the upper limit of integration
I/O Disp "ααN(–)SUBINTERVALS"	Disp "N SUBINTERVALS"	Number of subintervals for [A, B] is N
Disp "ααENTER EVEN N"	Disp "ENTER EVEN N"	The even integer N is to be entered
Input αN	Input N	After ?, type in N
ϕ STO S	ϕ → S	0 is stored in location S (for Simpson's Rule)
ϕ STO V	ϕ → V	0 is stored in location V (for the Trapezoidal Rule)
(αB – αA) ÷ αN STO W	(B – A)/N → W	Subinterval width (B–A)/N stored in location W
1 STO J	1 → J	1 is stored in location J
2nd CTL For (αJ,1,αN/2,1)	For (J,1,N/2,1)	Start of loop
αA + 2(αJ – 1)*αW STO L	A + 2(J – 1)*W → L	Left endpoint of [A+2(j–1)W, A+2jW] stored in L
αA + 2αJ*αW STO R	A + 2J*W → R	Right endpoint of [A+2(j–1)W,A+2jW] stored in R
(αL + αR) ÷2 STO M	(L + R)/2 → M	Midpoint of [A+2(j–1)W, A+2jW] stored in M
αL STO x-VAR	L → x	L is stored in location x
2nd α Y1 STO L	y1→ L	y1(L) is stored in location L
αM STO x-VAR	M → x	M is stored in location x
2nd α Y1 STO M	y1 → M	y1(M) is stored in location M
αR STO x-VAR	R → x	R is stored in location x
2nd α Y1 STO R	y1 → R	y1(R) is stored in location R
αW*(αL+4αM+αR) ÷3 + αS STO S	W*(L+4M+R)/3 + S → S	New sum is stored in location S (for Simp. Rule)
αW*(αL+2αM+αR) ÷2 + αV STO V	W*(L+2M+R)/2 +V → V	New sum is stored in location V (for Trap. Rule)
2nd CTL End	End	Increment J one step & loop again. If J>N/2, end loop.
I/O Disp "ααSIMPSON(–)RULE"	Disp "SIMPSON RULE"	Prepares for the Simpson's Rule approximation
Disp αS	Disp S	Displays the Simpson's Rule approximation S
Disp "ααTRAP(–) RULE"	Disp "TRAP RULE"	Prepares for the Trapezoidal Rule approximation
Disp αV	Disp V	Displays the Trapezoidal Rule approximation V

To execute the program in order to evaluate $\int_a^b f(x)dx$, do the following: 2nd QUIT (to quit the program)

Then GRAPH, F1 and key in your function f(x) into y1 Then ENTER 2nd QUIT PRGM NAMES (choose the program) ENTER

The display reads LOWERLIMIT, ?	Key in	A	ENTER	(gives the lower limit of integration)
The display reads UPPERLIMIT, ?	Key in	B	ENTER	(gives the upper limit of integration)
The display reads ... ENTER N, ?	Key in	N	ENTER	(number of subintervals of [A, B])

The display then exhibits the Simpson Rule and Trapezoidal Rule approximations for the value of the integral. Note that with this program, the number of subintervals for each rule is even.
To execute the program again, just key in ENTER

ϕ represents zero (distinguished from the letter 0) You can access " by I/O MORE MORE "
If you type α(–) then you get a "space" (between two words) — here (–) is the "negative" key