

DEC
**INTEROFFICE
MEMORANDUM**

PRELIMINARY
M-1094

SUBJECT SINE AND COSINE
SUBROUTINES FOR THE
PDP-1 COMPUTER¹
TO PDP Distribution List
DATE November 22, 1960
FROM Chas. W. Adams Associates, Inc

I. The argument is considered to have a sign and three binary integer positions, whereas the result is considered to have the binary point immediately to the right of the sign. The argument may vary from $\pm 2\pi$ radians to -2π radians, whereas the result varies from -0.377777 (almost -1.0) to 0.377777 (almost 1.0). These subroutines use the "modified multiply" subroutine.

II. Calling sequence:

L10 (the address of the angle expressed in radians)
JSP (the address of the first instruction of sine or cosine routines)

III. Subroutines:

	ORG	(fill in)
	OPD	MULTIP 001662
COSINE	DAP	CSX
	LAC	PO2
	JMP	COM
SINE	DAP	CSX
	CLA	
COM	DIO	X
	ADD	X
	SPA	
A2P	ADD	2P
	SUB	PO2
	SMA	
	JMP	SEC
	ADD	PO2
POL	RCR	S9
	RCR	S7
	JSP	MULTIP
	LOC	20P
	DAC	X
	LIO	X
	JSP	MULTIP
	LOC	X
	DAC	T
	LIO	C7
	JSP	MULTIP
	LOC	T

1. Acknowledgment
Sine and Cosine Subroutines for the PDP-1 Computer were supplied to DEC by Chas. W. Adams Associates, Inc., Bedford, Mass.

III. Subroutines: (continued)

	ADD	C5
	RCR	S9
	RCR	S9
	JSP	MULTIP
	LOC	T
	ADD	C3
	RCR	S9
	RCR	S9
	JSP	MULTIP
	LOC	T
	ADD	C1
	RCR	S9
	RCR	S9
	JSP	MULTIP
	LOC	X
	SCL	S3
	DAC	T
	XOR	X
	SMA	
	JMP	OUT
	LAC	ONE
	LIO	X
	SPI	
	CMA	
	JMP	CSX
OUT	LAC	T
CSX	JMP	
SEC	CMA	
	ADD	P02
	SMA	
	JMP	POL
	ADD	P02
	SPA	
	JMP	FOR
	SUB	P02
	JMP	POL
FOR	SUB	P02
	JMP	A2P
	C7	756103
	C5	121312
	C3	532511
	C1	144417
	20P	242763
	2P	311040
	P02	062210
	ONE	377777
	X	
	T	
	END	