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DECUS NO.	FOCAL8-195
TITLE	ALL PURPOSE GRAPHING PROGRAM
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ALL PURPOSE GRAPHING PROGRAM

DECUS Program Library Write-up DECUS NO. FOCAL8-195

ABSTRACT

This program finds the largest possible value for Y and scales the graph down so that all points will fit on the dimensions given it. This makes it possible to enlarge, selectively, any portion of the graph as needed. Also, this program has been cut to a bare minimum to fit in the storage areas of QUAD. Users with larger storage capacity may add comments where appropriate.

In the use of this program several options are available:

1. Any function F(X) can be entered by its coefficients alone. This is done by typing, GO, putting in the coefficients in reverse order (i.e. X ↑ Ø, X ↑ 1, X ↑ 2, X ↑ 3, ... , X ↑ 9, X ↑ 1Ø.) for two equations. The program will then halt. The user now types GOTO 1.3. This initiates the limits determination. The user enters the lower limit, upper limit, and the increment, then types RETURN. The function is now graphed out.

2. Functions may be entered that do not have the capability of being entered by their coefficients by inserting that (those) functions in step 3.1 in the following format:

```
3.1 SET Y1=F1(X);SET Y2=F2(X)
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NOTE: When entering an equation by its coefficients step 3.1 must always be 3.1 DO 4.

To graph the function just entered in group 3 the user now types GOTO 1.3 and proceeds as in the section 1 above.

3. Another option is for the program to graph out the value of Y for selected values of X. This is done by entering the function in either of the two ways described above and then typing GOTO 1.4. Step 1.4 will accept up to 3ØØ separate values for X. When the user has entered the desired amount of values for X he types a ↑ C and then types GOTO 1.5. The values of Y for the separate values of X will then be plotted.

NOTE: This procedure could very well be modified to make the use of this program more convenient. We are hard pressed for storage capability and thus had to make the program as small as possible.

```
C-FOCAL,1969

01.10 S Y=1E99;S S=-Y
01.20 F J=0,10;A E(J)
01.25 T !;F J=0,10;A H(J)
01.27 Q
01.30 A ?L U I?;D 1.1;F X=L,I,J;D 1.8;D 1.7
01.35 D 1.6;F X=L,I,J;D 1.9
01.37 Q
01.40 F P=1,300;A X(P)
01.50 D 1.1;F K=1,P-1;S X=X(K);D 1.8;D 1.7
01.55 D 1.6;F K=1,P-1;S X=K(K);D 1.9
01.57 Q
01.60 S S=S/28;T %,!"SCALE",1/S,!!!
01.70 I (FABS(Y)-FABS(X))2.9;S Y=X;R
01.80 D 3;S A=FABS(Y1);S B=FABS(Y2);I (B-A)1.85;I (B-S)2.9;S S=B
01.85 I (A-S)2.9;S S=A
01.90 S A=-1;S B=A;D 3;T Y1;S Y1=Y1/S;S Y2=Y2/S;S C=0;D 1.95;T !
01.95 F Z=1,57;S T=0;D 2

02.05 S J=-FABS(FITR(29+Y2-Z));I (-FABS(FITR(29+Y1-Z)))2.3;I (J)2.2
02.10 T "/";S T=1;S A=0;S B=0;C 2.4
02.20 T "+";S T=1;S A=0;C 2.4
02.30 I (J)2.4;S T=1;S B=0;T "*
02.40 I (-T)2.8;I (29-Z)2.6,2.5,2.6
02.50 T "-";R
02.60 I (Y-X)2.7,5.1,2.7
02.70 T "
02.80 I (A+B)2.9;I (Z-29)2.9;S C=C+1;I (C-3)2.9;S Z=75
02.90 R

03.10 S Y1=X*FSQT(9*FSIN(FCOS(Y2*3.14159/180)));S Y2=Y1+X

04.10 S Y1=0;S Y2=0;F J=0,10;S Y1=Y1+E(J)*X↑J;S Y2=Y2+H(J)*X↑J

05.10 T "↑";R
*
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