

## HP-38G

### Adding Vectors Graphically Program

This program will sketch two vectors in standard position. Using the parallelogram law for the vector addition, the program also sketches the vector sum. Be sure to set an appropriate viewing rectangle. The Function applet should have a plot range of  $-10 \leq x \leq 10$  and  $-10 \leq y \leq 10$ .

```
ADDVECT PROGRAM
INPUT A;; "ENTER A";;1:
INPUT B;; "ENTER B";;1:
INPUT C;; "ENTER C";;1:
INPUT D;; "ENTER D";;1:
ERASE:
LINE -10;0;10;0:
LINE 0;-10;0;10:
LINE 0;0;A;B:
LINE 0;0;C;D:
FREEZE:
A+C▶ E
B+D▶ F
LINE 0;0;E;F:
LINE A;B;E;F:
LINE C;D;E;F:
FREEZE
```

### Mandelbrot Set Program

This program can be used to determine if a complex number is in the Mandelbrot Set. The number is entered in two parts, the real part of the complex number and the imaginary part of the complex number. After entering the number, press  to see the next number in the sequence. If the terms of the sequence become very large, the sequence is unbounded and the complex number is not in the Mandelbrot Set. This program will give the first twenty terms of the sequence.

```
MANDLBRT PROGRAM
INPUT A;"ENTER REAL PART";"ENTER A";;"1:
INPUT B;"ENTER IMAG PART";"ENTER B";;"0:
A▶C:
B▶D:
0▶N:
WHILE N<20 REPEAT
  ERASE:
  N+1▶N:
  DISP 1;"TERM NUMBER"N:
  DISP 3;"REAL PART":
  DISP 4;A:
  DISP 6;"IMAG PART":
  DISP 7;B:
  FREEZE:
  A▶F:
  B▶G:
  F2-G2+C▶A:
  2FG+D▶B:
END:
```