Write, assemble and run successfully on the simulator a Mac-1 subroutine $\text{min}(n,x)$ that returns in the AC the address of the integer possessing the algebraically smallest value among the $n$ integers in the array whose starting address is $x$. Your subroutine should be tested with the main program shown below, which defines how the parameters are passed. If there is more than one such minimum value, then return the highest address among the set of them.

```
/main program | /continued from below halt
EXTRN min | data 57
ans1 RES 1 | 0
ans2 RES 1 | 129
ans3 RES 1 | -34
n1 9 | 8
n2 10 | 3
n3 5 | -29
start loco 4020 | -2
swap /initialize sp | -3
loco n1 | 347
push /push address n1 | -15
loco data | 6
push /push array start address | 35
one call min | -413
stod ans1 | END start
insp 2
loco n2 /push address n2 |
push
loco data |
add (4) |
push /push array start address |
two call min |
stod ans2 |
insp 2
loco n3 /push address n3 |
push
loco data |
add (7) |
push /push array start address |
three call min |
stod ans3 |
insp 2 |
halt
/data array continues here but |
/ is shown in the above right hand column
```

Hand in a copy of the main program symbolic assembly listing, the subroutine symbolic assembly listing, the contents of (macro) memory after “load main sub” (i.e., of main.abs) before execution of the program, and the contents of memory after execution of the program. Highlight and comment upon the final answers. Specify what values are contained in the addresses specified by ans1, ans2, and ans3.