1. Information representation. We gotta have some question about number representation. Consider number system(s) that contain 10 bits, with the radix point just to the right of the MSB. For that arrangement of bits, fill in the missing elements of the following table. (Remember that Maximum is right-most on the number line; minimum is left-most on the number line.)

Value	Unsigned binary pattern	Twos-complement pattern
Maximum	11 1111 1111 ✓	01 1111 1111 ✓
Minimum	0.0000 0000	10 0000 0000 ✓
13/32	0.0110 10000 ✓	0.0110 10000 ✓
-3/16	N/A	1.1101 00000 ✓
1¾	1.1100 00000 ✓	N/A
~~-3/2~~	N/A	1010100000

(handwritten margin notes:)
1010100000
0101011111
+
0101100000
$2^5 + 2^6 + 2^8 =$

لبس 0111
7/4 = لبس 0111

0011
1100
+
1
لبس

2. General information question:
   a) How does a programmer preserve the values of registers for "normal" processing when an interrupt is encountered? Give a two instruction sequence that will preserve registers R16-R31.

   (handwritten:) The programmer stores the values to a known location and restores the values before leaving the interrupt with (stmw) and Lmw commands.
   lmw r16, 0x1000 ✓
   stmw r16, 0(r31) ✓
   (sorry I haven't really used these since I can't get my clock to work, but I do know their purpose)

   b) Give a sequence of instructions (only 2 needed) that will set up the system to expect the interrupt table to be found at the third legal location for the table. That is, what is the third legal location for the interrupt table, and how do you set it up?

   (handwritten:) lis r2, 0x0002
   mtevpr r2 ✓

   you have to have multiples of 64 Do
   first legal is 0x00000000, second legal
   is 0x00010000, etc

   c) When a branch-to-subroutine is encountered, where does the system store the address to which the subroutine should return?

   (handwritten, circled -2:) It depends if it's critical or non-critical, in this case it's non-critical so it ends up in SRR0 and the state of MSR is stored in SSR1

   d) Assume a conditional branch is located at address 0x00010000. What is the highest address that can serve as the target of the branch? That is, what is the highest address that can be reached?

   (handwritten:)
   0111 1111 1111 1100
   7 f f c
   0000
   17FFC
   0x00010700
   (circled -1)
   32 - 6 - 5 - 5 - 2 = 14
   00000000 00000000 0000000
   you have to branch at Multiple of 4 in memory

   e) What is the purpose of the watchdog timer interrupt?

   (handwritten:) The purpose of the watchdog timer is to provides a means of escape from system errors in which it gets stuck, by errors in the code, etc.