Intro to Medical Robotics

Binary and Analog-to-Digital Conversion practice

Use a Calculator to solve these problems

1. Convert to binary:
   1. 178
   2. 253
   3. 41
   4. 20
   5. 99
2. Convert to decimal:
   1. 10010100
   2. 01100011
   3. 11100101
   4. 10000101
   5. 10111010
3. As in your Arduino, you have a 10-bit analog-to-digital converter (ADC) that measures a signal between 0 and 5 volts.
   1. For an input of 3 volts, what does your ADC read inside the microcontroller?
   2. For an input of 1.5 volts, what does your ADC read?
   3. If you read 575, what voltage is on the output?
   4. How about if you read 70?
4. For a slightly different ADC, input ranges from 0 to 10 volts and uses a 12-bit conversion.
   1. For an input of 0 volts, what does the ADC read?
   2. For an input of 3 volts, what does the ADC read?
   3. What voltage is being read if you get a sensor reading of 300?