Math 116: Written Homework Set 2

This assignment is due on Thursday, February 9th in class. Show all work where possible! Answers magically appearing will receive no credit.

1. Convert the following base two binary numbers to decimal (base 10) form.
   a. 101101_{two}
   b. 1100100_{two}
   c. 11110101001_{two}

2. Convert the given numeral from the given base to base 10 (decimal)
   a. 243_{five}
   b. $\text{E94A}_{\text{sixteen}}$

3. Convert the given base 10 decimal numeral to the indicated base.
   a. 81 to base 2 (binary)
   b. 117 to base 2 (binary)
   c. 267 to base 7
   d. 7692 to base 16

4. Convert the following base five number 430_{five} to a base three number.

5. Use the binary to hexadecimal conversion table given in class to perform the following conversions.
   a. $1110111000111011011_{\text{two}}$ from binary to hexadecimal.
   b. $\text{F73A1}_{\text{sixteen}}$ from hexadecimal to binary.

6. Use the method of trial divisions (square root test) to determine if the following numbers are prime.
   a. 203
   b. 701

7. Write the prime factorization of the following numbers in canonical form.
   a. 425
   b. 7425

Selected Answers

1. a. 45
   c. 1961

2. a. 73

3. a. 1010001_{two}
   c. 531_{five}

5. a. $771\text{DB}_{\text{sixteen}}$

6. a. $203 = 7 \cdot 29$, not prime

7. b. $7425 = 3^3 \cdot 5^2 \cdot 11$