CSCI 1900 Test 2 Review Problems

1. Given the integers *m = 17* and *n = 6*, find the values of *q* and *r*  | *m = q\*n + r.*
   1. Does *n* | *m* ?
   2. What is *m* mod *n* ?
2. Given *m = 540* and *n = 504* :
   1. Use Euclid’s algorithm to find GCD( *m*, *n )*.
   2. What is the LCM( *m*, *n* )?
3. Convert the following numbers as indicated
   1. 10A16 to base 10
   2. 110010112 to base 10
   3. 17178 to base 10
   4. 37775 to base 10
   5. 11 to base 2
   6. 1028 to base 8
   7. 3083 to base 16
   8. 116 to base 5

Let 

1. Find *AB*.
2. Find *A + C*.
3. Find *AT* .

Let 

1. Compute the meet of *D* and *E* .
2. Compute the join of *D* and *E*
3. Given

Find the values for w, x, y, and z.

1. Using a true table, evaluate 
2. Given:  
   *P(x) : x is positive* *Q(x) : x < 10*  
     
   Write each of the following in terms of *P(x)*, *Q(x)*, logical connectives, and quantifiers.  
     
   a) All integers greater than or equal to 10 are positive.  
     
     
     
   b) There is an integer less than 10 that is negative.
3. Negate the following  
     
   a) The Queen of Hearts is making tarts  
     
   b) Alice is down the rabbit hole or it is not Sunday.  
     
   c) If Humpty Dumpty sits on a wall, then he has a great fall.
4. Use a truth table to determine whether each of the following is a tautology, a contingency, or an absurdity  
     
   a)   
     
   b) (  
     
   c)
5. Give the converse and the contrapositive of the following statements.  
     
   a) If today is test day then I will not oversleep.  
     
   b) Not submitting my homework implies I am buried in work.
6. Determine if the following arguments are valid  
     
   a) Today is not Saturday.  
    If today is Saturday, then I will sleep in.

I will not sleep in.

b) If it rains on test day, then I will fail the test.

It is not raining on test day.

I will not fail the test.

c) Today is a week day or today is a weekend day.

Today is a weekend day.

Today is not a weekend day.

1. Prove that the product of an even integer and an odd integer is even.
2. Explain how a valid argument can give a false conclusion.