Discussion 7/17/19 week 4   arrive 10 mins early!

200pts Final Exam saturday 27 1:00pm - 4:00pm
7 questions : 6 questions worth 25pts 's 1 question
            worth 50 pts

contrapositives
   If statement A, then statement B

   Contrapositive :
   If not statement B, then not statement A.

   Example : If $\boxed{\text{you drive the 60 freeway westbound}}$
            then $\boxed{\text{you will be in Los Angeles.}}$ statement
                              statement B   A

        contrapositive : If you will not be in Los Angeles,
                then you do not drive the 60 freeway
                westbound.

Converse : If statement B, then statement A.

        converse : If you will be in Los Angeles
                then you drive the 60 freeway
                westbound

Inverse : If not statement A, then not statement B

        inverse : If you do not drive the 60 freeway
                westbound, then you will not be in Los
                Angeles

Let a,b,n be integers. If ab is not an integer multiple of n,
then a is NOT a multiple of n 's b is NOT a multiple of n.
    Contrapositive : If a is a multiple of n or b is a multiple
    of n, then ab is a multiple of n.
    Proof (of contrapositive) :
      • Suppose a is an $\overset{\text{integer}}{\text{multiple}}$ of n. Then there exists
        an integer k that satisfies a = kn.
        So we have ab = (kn)b
                       = (kb)n since kb is also an integer

we conclude that ab is a multiple of n.

- Suppose b is an integer multiple of n. Then there exists an integer l that satisfies $b = ln$

so we have
$$ab = a(ln)$$
$$= n(al)$$

since al is also an integer, we conclude that ab is an integer multiple of n.