

- Recall Symbolically Write Guidelines, which is posted homework page and handout page for your convenience.
 - If you need, look at the LaTeX here to remind yourself how to Latex:
 $n|a$ (i.e., n divides a), $n \nmid a$ (i.e., n does not divide a), and $a \equiv b \pmod{n}$ (i.e., a is congruent to b modulo n).
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Exercise. A variant of Exercise 3.2.7.

§3.2
p113

Conjecture 3. For each integer a , we have that

$$a \equiv 2 \pmod{8} \text{ if and only if } (a^2 + 4a) \equiv 4 \pmod{8}.$$

- i. Sybolically write Conjecture 3, using the biconditional ($\iff$). Next sybolically write Conjecture 3 as the conjunction ($\wedge$) of two conditional ($\implies$) statements.

cut this out and put your solution here

- ii. For each of the two conditional statements in Part (i), determine if the conditional statement is true or false. If the conditional statement is true, write a proof. If it is false, provide a counterexample.
- iii. Is Conjecture 3 true or false? Explain.