Some of my advanced original problems

A11. Let
 and be a sequence of real
numbers such that for every

Prove that

A10. For
every real number define by the relation

Prove that is a well defined
integrable function, then compute

A9. Let
there be given   and the inequality

Prove that:
(i) If holds whenever then
(ii) If holds whenever then
A8. Find
 with the intermediate
value property such that

A7. Solve
in real numbers:

A6. Find
all derivable functions such that

A5. Let
 be linear on each
interval such that for every integer with Prove that is antiderivable.
A4. Let
 be matrices with real
entries such that Prove that
A3. Let
 be matrices with complex
entries such that Prove that or
A2. Let
 be elements of a ring
, inversable, such that

whenever Prove that
A1. Let
 be continuous such
that for every reals , there exist , with such that

Prove that is nondecreasing.