

This miniproject asks you to create three proofs.

- (a) Do number #16 in section 1.6
- (b) Suppose a drawer contains six identical pairs of white socks and ten identical pairs of black socks, but all 32 individual socks are loose (that is, not paired up). Prove that if you pull out three socks, then you must get a pair of socks.
- (c) Let  $a$  and  $b$  be real numbers. Prove that the following are equivalent.
  - (i)  $a > b$
  - (ii) The mean of  $a$  and  $b$  is greater than  $b$ .
  - (iii) The mean of  $a$  and  $b$  is less than  $a$ .