本次作業不用繳交

1. Exercise 1.32 in textbook.
2. Exercise 1.33 in textbook.
3. Exercise 1.35 in textbook.
4. Exercise 1.36 in textbook.
5. Exercise 1.40 in textbook.
6. Exercise 1.41 in textbook.
7. Exercise 1.42 in textbook.
8. Exercise 1.43 in textbook.
9. Exercise 1.44 in textbook.

10. Show that \( \binom{M}{m} = \binom{M-1}{m} + \binom{M-1}{m-1} \), where \( M, m \) are positive integers and \( m < M \).

11. Show that \( \sum_{x=0}^{r} \binom{m}{x} \binom{n}{r-x} = \binom{m+n}{r} \), where \( \binom{k}{x} = 0 \) if \( x > k \).

12. Show that \( \binom{m+r}{m} \binom{n}{m+r} = \binom{n}{m} \binom{n-m}{r} \).

13. Show that
   (a) \( \sum_{j=0}^{n} \binom{n}{j} = 2^n \);
   (b) \( \sum_{j=0}^{n} (-1)^j \binom{n}{j} = 0 \).