1. State the contrapositive of each of the following conditionals.

   (a) If today is Tuesday then it is raining.

   (b) If the coffeeshop has free donuts then I'm going right now.

   (c) If I can save up the money I'll move to either Cambodia or Laos.

2. Provide proofs of each of the following by first stating and then proving the contrapositive.

   (a) Let $n \in \mathbb{Z}$. If $3n - 7$ is odd then n is even.

   (b) Let $x \in \mathbb{R}$. If $(x - 2)(4 - x^2) \geq 0$ then $x \leq 2$.

3. Prove by first applying a lemma (hint: you've done it) and then linking this to a direct proof.
   Let $n \in \mathbb{Z}$. If $3n - 7$ is odd then $7n + 11$ is odd.

4. Prove by first breaking up the problem into cases and then proving directly:
   If $n \in \mathbb{Z}$ then $n^3 + n$ is even.

5. Prove by proving the contrapositive with cases.

Let $x, y \in \mathbb{Z}$. If xy is odd then x and y are odd.