Any of the following exercises are fair game for appearing in a slightly altered state on an exam. I suggest that you write up your solutions **neatly** in your own handwriting, or .tex them up, so that you can easily use them for studying later. All solutions should be your own! Feel free to discuss solutions with others, but don't write anything down that you don't understand (and write it all yourself!). **Only a subset of the problems will be graded, so do them all to the best of your ability, and be aware: even if there is only one problem that you don't do well, it might be one that's graded! So, try to do them all well!**

1. Do problem 6 on page 86 of Folland.
2. Do problem 1 on page 212 of Folland. **Justify your answers with estimates/integrals.**
3. Do problem 2 on page 213 of Folland.
4. Do problem 3 on page 213 of Folland. **Make sure to show your work.** For part (a), classify each of f, $f * f$, and $f * f * f$ as being either piecewise continuous, continuous, or continuously differentiable (i.e., having a continuous derivative). Would you expect $f * f * f * f$ to be more or less smooth than $f * f * f$? What's the pattern?
5. Do problem 4 on page 213 of Folland.
6. Do problem 5 on page 213 of Folland.
7. Consider the function $K : \mathbb{R} \to \mathbb{R}$ defined by equation (7.8) on page 212 of Folland. Prove that K and all of its derivatives, $K^{(l)}\ \forall l \in \mathbb{Z}^+$, are both continuous and bounded.
   Hint: The only real difficulties will occur at $y = \pm 1$. You can handle them by showing that
   $$\lim_{x \to \infty} \frac{p(x)}{e^x} = 0$$
   holds for any polynomial $p(x)$ of finite degree, and then by arguing that this implies that $\lim_{y \to \pm 1} K^{(l)}(y) = 0$ holds for all $l \in \mathbb{Z}^+$.
8. Do problems 7 and 8 on page 213 of Folland. You should use the theorems stated in Section 7.1 of Folland for problem 8.
9. Do problem 3 on page 224 of Folland.
10. Derive entries 8 and 12 in Table 2 on page 223 of Folland.