Brief solutions to selected problems in homework week 01

1. Section 8.8, problem 55:

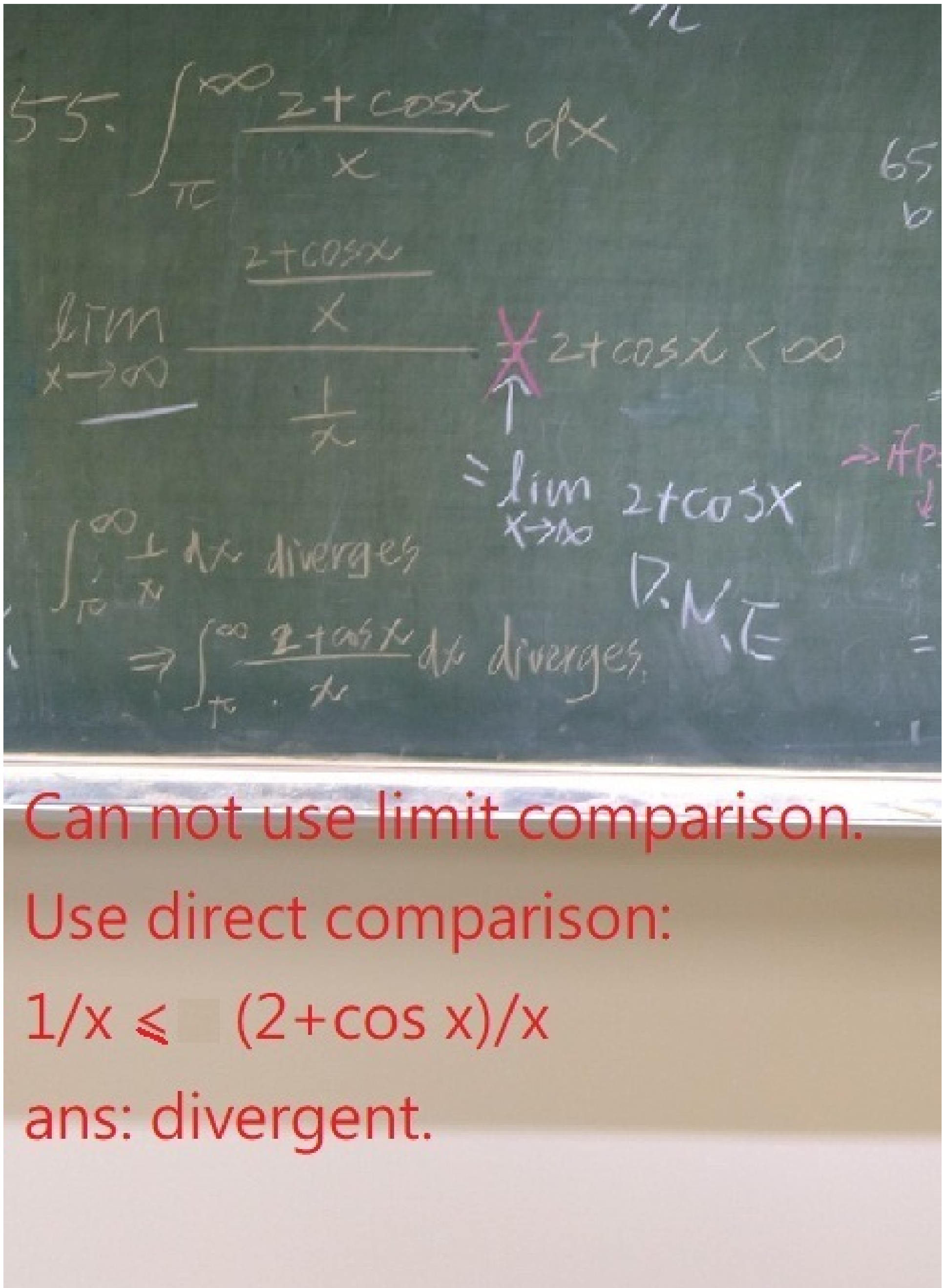

Figure 1: Section 8.8, problem 55

2. Section 8.8, problems 81,82, method 1: (method 2 is $x = e^y$ and integration by parts)

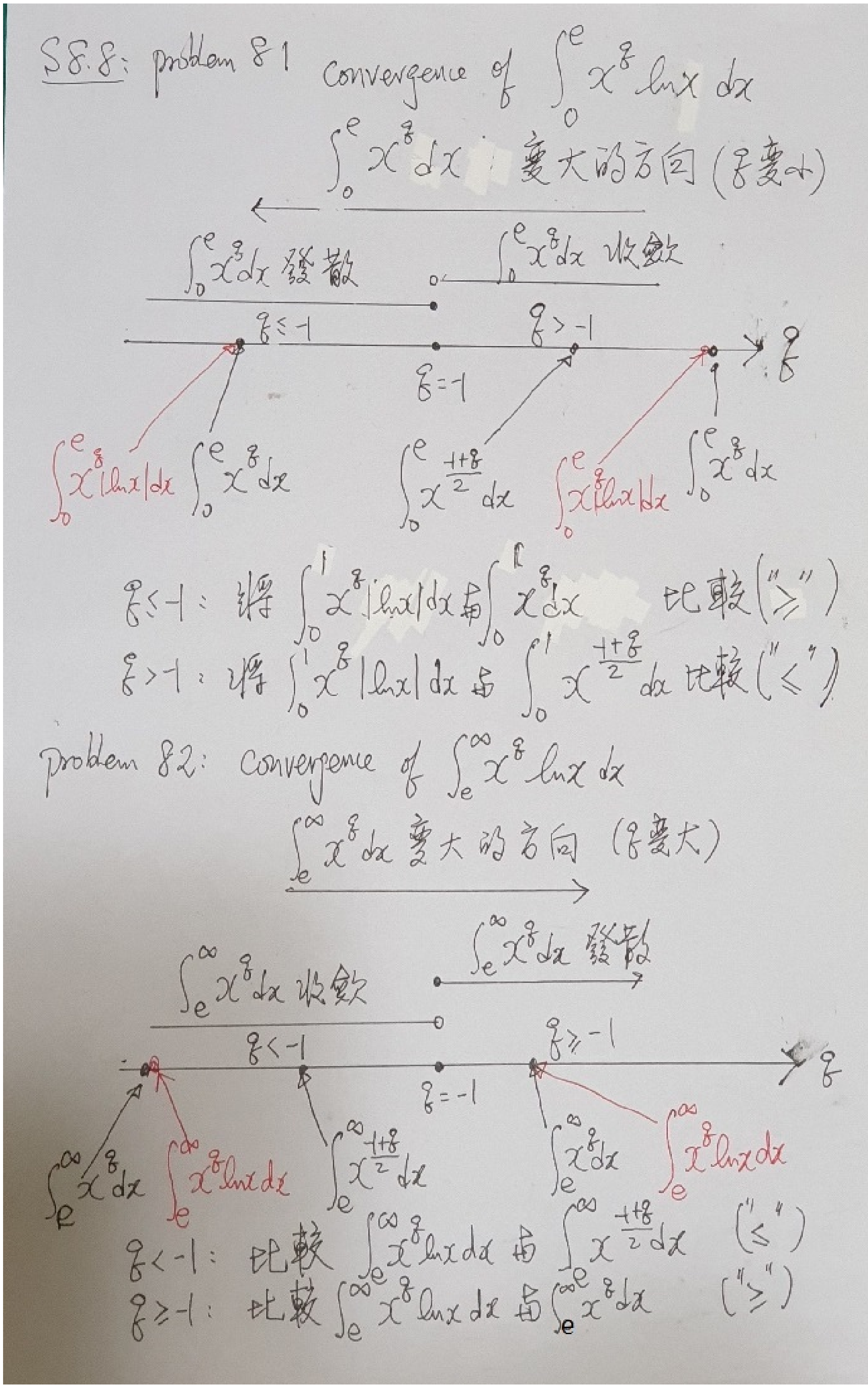

Figure 2: Section 8.8, problems 81,82

Problem 83: From problem 81 and problem 82, $\int_0^\infty x^q \ln x dx$ diverges for all $q \in \mathbb{R}$.

3. Problem 3:

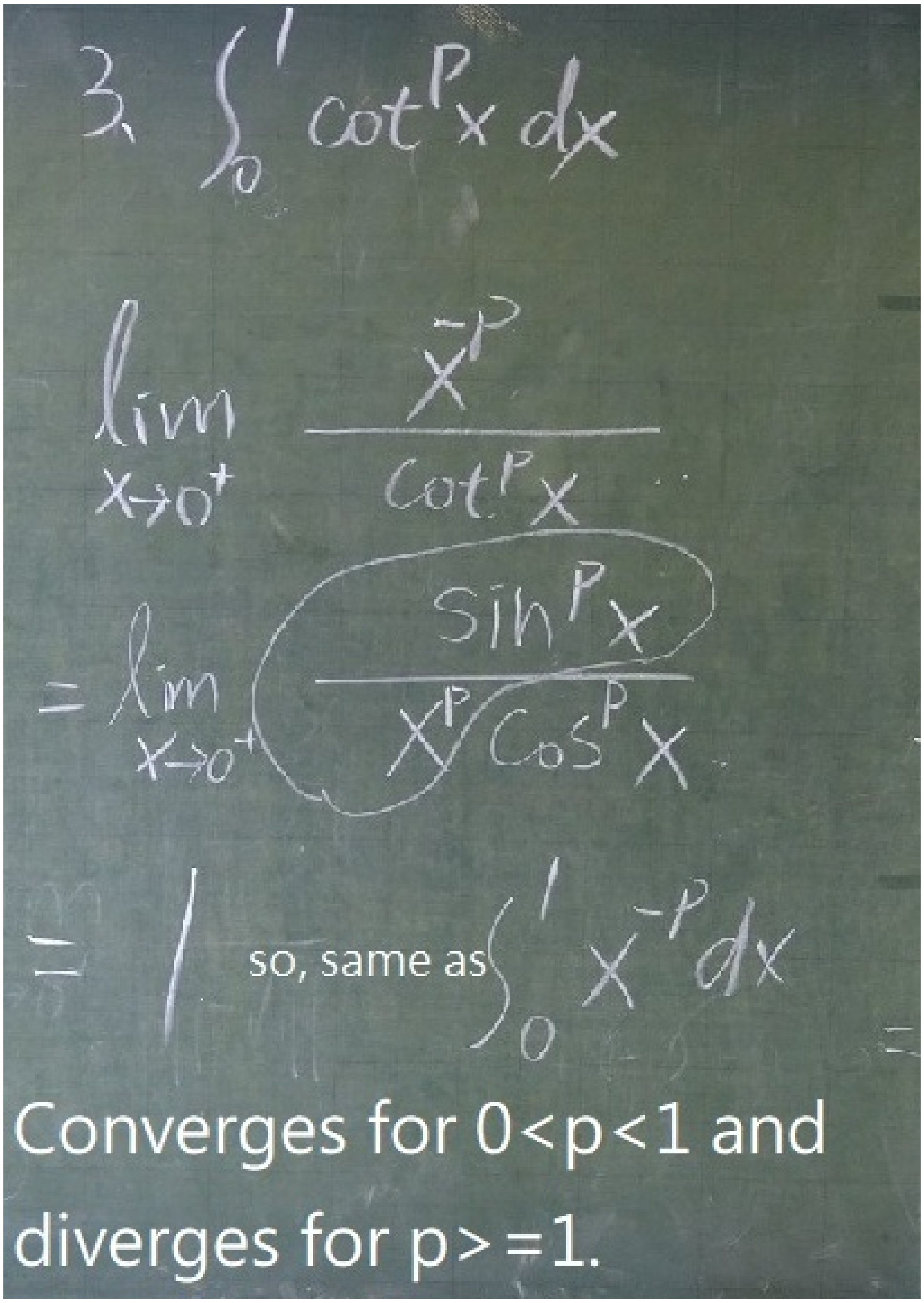

Figure 3: Problem 3

4. Chapter 8, Additional and advanced problems, problem 8:

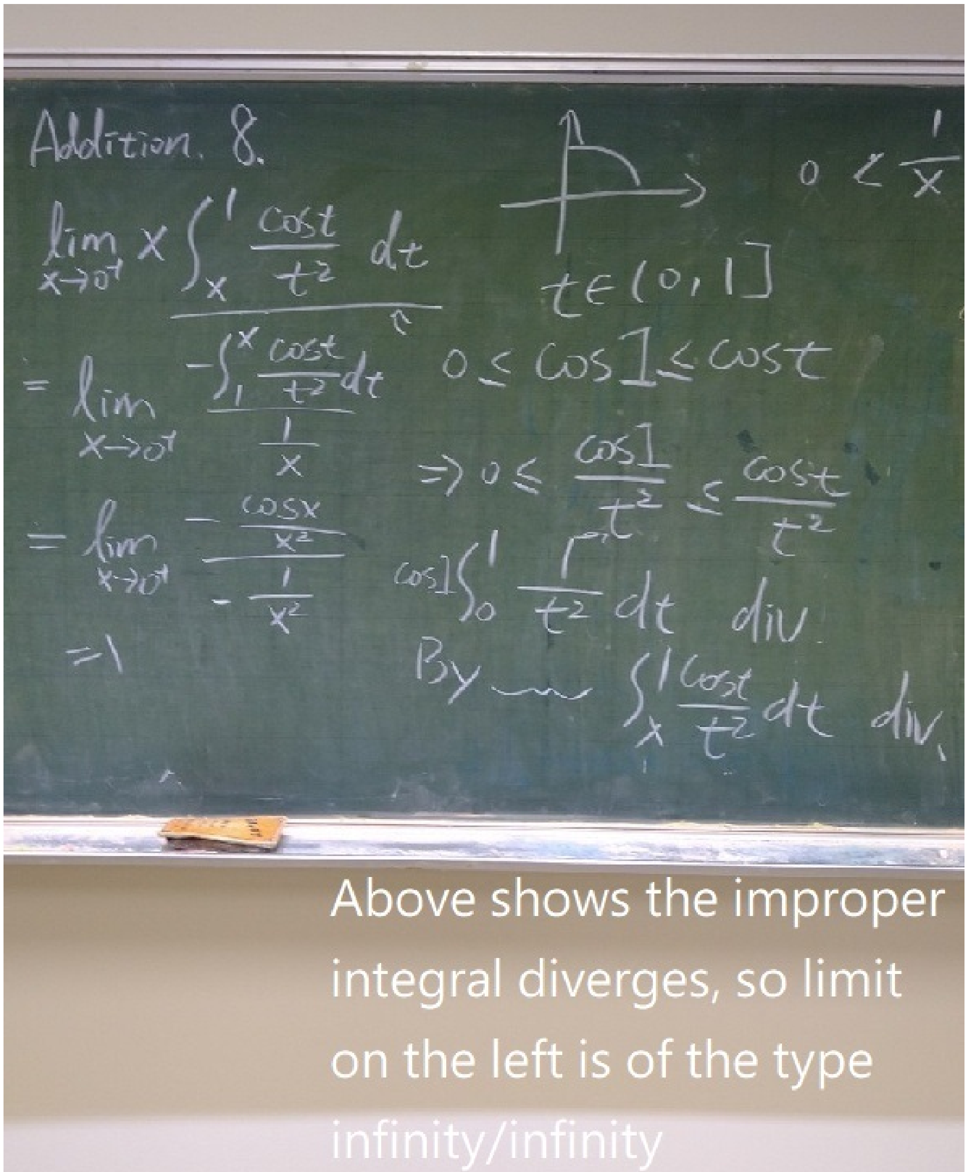

Figure 4: Chapter 8, Additional and advanced problems, problem 8

5. Section 10.1, problem 63:

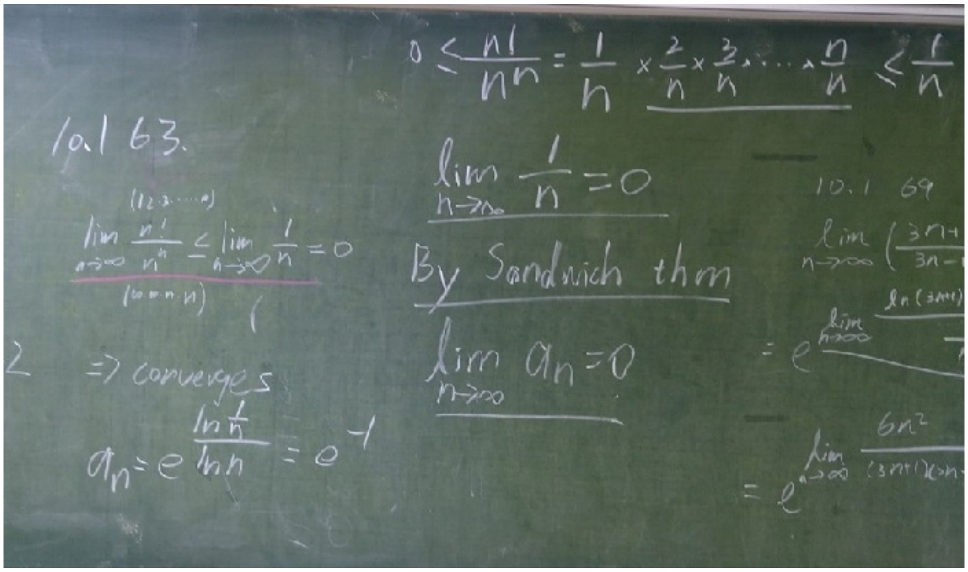

Figure 5: Section 10.1, problem 63