

**Exercise 6. (Q2.1):** Sequences  $(x_n)$  and  $(y_n)$ , which both diverge, but whose sum  $(x_n + y_n)$  converges.

Let  $x_n = n$  and  $y_n = -n$ , then  $(x_n)$  and  $(y_n)$  both diverge; however,  $x_n + y_n = 0$ , thus their sum converges to 0.