

Homework answers §4.3, exercise 4

Express each of the following unions and intersections as an interval.

$$\text{a) } \bigcap_{n=1}^{\infty} \left[1 + \frac{1}{n}, 4 \right] = [2, 4]$$

$$\text{b) } \bigcup_{n=1}^{\infty} \left[1 + \frac{1}{n}, 4 \right] = (1, 4]$$

$$\text{c) } \bigcap_{n=1}^{\infty} \left[1, 4 + \frac{1}{n} \right) = [1, 4]$$

$$\text{d) } \bigcup_{n=1}^{\infty} \left[1, 4 + \frac{1}{n} \right) = [1, 5)$$

$$\text{e) } \bigcap_{n=1}^{\infty} \left[1 + \frac{1}{n}, 4 + \frac{1}{n} \right] = [2, 4]$$

$$\text{f) } \bigcup_{n=1}^{\infty} \left[1 + \frac{1}{n}, 4 + \frac{1}{n} \right] = (1, 5]$$

$$\text{g) } \bigcap_{n=1}^{\infty} \left[1 + \frac{1}{n}, 4 - \frac{1}{n} \right] = [2, 3]$$

$$\text{h) } \bigcup_{n=1}^{\infty} \left[1 + \frac{1}{n}, 4 - \frac{1}{n} \right] = (1, 4).$$