

Supplementary Exercises

- A. Give the least upper bound of the following sets. If the least upper bound does not exist, then say it does not exist.
- (a) $\{x \in \mathbb{R} \mid x \geq 0 \text{ and } x^2 < 2\}$
 - (b) $\left\{\frac{2n}{n+1} \in \mathbb{R} \mid n \in \mathbb{N}\right\}$
 - (c) $\left\{\frac{p}{q} \in \mathbb{R} \mid p, q \in \mathbb{N}\right\}$
- B. Let S be a nonempty, finite set of real numbers.
- (a) Explain why S is bounded.
 - (b) What is the least upper bound of S ?
 - (c) What is the greatest lower bound of S ?
- C. Find the equation of the line with slope -3 passing through the point $(1, 4)$.
- D. Find the equation of the line passing through the points $(3, 2)$ and $(5, 5)$. Express your answer in slope-intercept form.
- E. Find $\lim_{x \rightarrow 1} \frac{x^2 - 1}{x^3 - 1}$.
- F. Same instructions as problem 10 on page 227.
- (a) $\ln(1.005)$
 - (b) e^1
 - (c) $\sin(5^\circ)$