

Abbott, Section 1.2: Exercises 1.2.2, 1.2.7 (a,b,c), 1.2.8, 1.2.9, 1.2.12.

Hints and remarks:

- in Exercise 1.2.2, since both 2 and 3 are greater than 1, it is clear that r must be positive, i.e., we can take it in the form $r = \frac{p}{q}$, where $p \in \mathbb{N}$ and $q \in \mathbb{N}$; also, notice that $2^{p/q} = 3$ is equivalent to $2^p = 3^q$;
- in Exercise 1.2.8, you can define a function by just explaining what it does (and giving explicitly the function values for the first several numbers from the domain of the function), or you can write the function with a formula by using the functions
 - *floor*, $g(x) : \mathbb{R} \rightarrow \mathbb{Z}$, where $g(x) = \lfloor x \rfloor$ is the largest integer less than or equal to x (e.g., $\lfloor 2.0 \rfloor = 2$, $\lfloor 2.76 \rfloor = 2$, $\lfloor -2.76 \rfloor = -3$),
 - *ceiling*, $h(x) : \mathbb{R} \rightarrow \mathbb{Z}$, where $h(x) = \lceil x \rceil$ is the smallest integer greater than or equal to x (e.g., $\lceil 2.0 \rceil = 2$, $\lceil 2.76 \rceil = 3$, $\lceil -2.76 \rceil = -2$).