**Def**
A function consists of a **domain** (a set A, for we usually a subset of the real numbers) and a rule that assigns each element x of A to exactly one element, called f(x), of a set B (again for us usually the real numbers).

**Domain:** The set of numbers that "go into" the function. Either given to you explicitly, or assumed to be all the numbers that are "legal" to plug into the rule (function).

- The domain of \( f(x) = \frac{1}{x} \) is \( \mathbb{R} - \{0\} \).
- The domain of \( f(x) = \log x \) is \( \{x \mid x > 0\} \).

**If you think of the graph of a function, the domain is the "shadow" on the x-axis.**

- A function is increasing (ie the graph is going up as you look from left to right) on an interval I, if \( f(x_1) < f(x_2) \) whenever \( x_1 < x_2 \) in I.

- A function is decreasing if \( f(x_1) > f(x_2) \) whenever \( x_1 < x_2 \).
2, 24, 28, 30, 34.
20.
42.

\[ f(x) = x^2 \]
\[ \frac{f(a+h) - f(a)}{h} \]

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