**Definition** (Graph). A (directed) graph  $\mathcal{G} = \langle \mathbf{V}, \mathbf{A}, \mathbf{s}, \mathbf{t} \rangle$  consists of a set of vertices V, a set of arrows A, and two functions  $s, t: A \rightarrow V$ , called the source and target functions, respectively. Given  $a \in A$  with s(a) = v and t(a) = w, we say that a is an arrow from v to w.