

$$\begin{array}{ccc} \overline{F}X & \xrightarrow{\overline{F}(b)} & \overline{F}Y \\ \uparrow c & \sqsubseteq & \uparrow d \\ X & \xrightarrow{b} & Y \\ \uparrow s & \sqsubseteq & \uparrow t \\ & \mathbf{1} & \end{array}$$

A commutative diagram illustrating a relationship between objects  $X$  and  $Y$  and their images under a functor  $\overline{F}$ . The diagram consists of four nodes:  $X$  (bottom-left),  $Y$  (bottom-right),  $\overline{F}X$  (top-left), and  $\overline{F}Y$  (top-right). The nodes are arranged in a square grid. The horizontal arrows are  $X \xrightarrow{b} Y$  and  $\overline{F}X \xrightarrow{\overline{F}(b)} \overline{F}Y$ . The vertical arrows are  $X \xrightarrow{c} \overline{F}X$  and  $Y \xrightarrow{d} \overline{F}Y$ . A curved arrow labeled  $s$  points from the bottom-left to the top-left, and a curved arrow labeled  $t$  points from the bottom-right to the top-right. A curved arrow labeled  $\mathbf{1}$  points from the bottom-left to the bottom-right. Two squares, each represented by a square symbol with a horizontal line below it ( $\sqsubseteq$ ), are positioned between the horizontal and vertical arrows, indicating that the diagram commutes.