VISIBILITY CONCEPTS IN GRAPH THEORY

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Given a connected graph G and a set of vertices $X \subseteq V(G)$, two vertices $x, y \in V(G)$ are called to be *X-visible* if there is a shortest x, y-path (also called geodesic) whose interior vertices do not belong to X. Then X is

- a *mutual-visibility set*: if any two vertices of X are X-visible;

- an *outer mutual-visibility set*: if any two vertices $x, y \in X$ and any two vertices $x \in X$ and $y \in \overline{X}$ are X-visible;

- a *dual mutual-visibility set*: if any two vertices $x, y \in X$ and any two vertices $x, y \in \overline{X}$ are X-visible; and

- a *total mutual-visibility set*: if any two vertices $x, y \in V(G)$ are X-visible.

In this tutoring, we will present fundamental results on these concepts. A special attention will be given to graphs of diameter two as there unexpected connections with some classical mathematical problems and concepts arise.