Minmax Theorem

- playing second (with knowledge of other player's move) cannot be worse than playing first, so:

$$\underbrace{\min_{\mathbf{P}} \max_{\mathbf{Q}} \mathbf{M}(\mathbf{P},\mathbf{Q})}_{\text{Mindy plays first}} \geq \underbrace{\max_{\mathbf{Q}} \min_{\mathbf{P}} \mathbf{M}(\mathbf{P},\mathbf{Q})}_{\text{Mindy plays second}}$$

- von Neumann's minmax theorem:

$$\min_{\mathbf{P}} \max_{\mathbf{Q}} \mathbf{M}(\mathbf{P},\mathbf{Q}) = \max_{\mathbf{Q}} \min_{\mathbf{P}} \mathbf{M}(\mathbf{P},\mathbf{Q})$$

- in words: no advantage to playing second