F09 Ordered pairs exercise

Course in Semantics · Ling 531 / 731 University of Kansas

Key

1. Write the following function, which is in list notation, as a set of ordered pairs.

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{ \(\text{Douglas}\), \(\text{Lawrence}\), \(\text{Shawnee}\), \(\text{Wyandotte}\), \(\text{Kansas City}\), \(\text{Sedgwick}\), \(\text{Wichita}\), \(\text{Johnson}\), \(\text{Oove}\), \(\text{Gove}\), \(\text{Gove}\), \(\text{City}\)\)}
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- 2. (a) What is the most probable domain of the first member of each pair? $\{x \mid x \text{ is a county in Kansas}\}$
 - (b) What is the most probable domain of the second member of each pair? $\{x \mid x \text{ is a city in Kansas }\}$
 - (c) What is the Cartesian product of the two sets? $\{x \mid x \text{ is a county in Kansas}\} \times \{x \mid x \text{ is a city in Kansas}\}$

Write the following (part of a) characteristic function as a set of ordered pairs.

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 \begin{bmatrix} \text{Joey} & \rightarrow & 1 \\ \text{Monica} & \rightarrow & 1 \\ \text{Leonard} & \rightarrow & 0 \\ \text{Penny} & \rightarrow & 0 \\ \text{Phoebe} & \rightarrow & 1 \\ \text{Jerry} & \rightarrow & 0 \\ \end{bmatrix}
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\{ \langle Joey, 1 \rangle, \langle Monica, 1 \rangle, \langle Leonard, 0 \rangle, \langle Penny, 0 \rangle, \langle Phoebe, 1 \rangle, \langle Jerry, 0 \rangle \}
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3. Write the following set of ordered pairs as a function in λ -notation. (Hint: It isn't quite a characteristic function. Hint 2: Think about formulating the abstracted set of ordered pairs first)

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{ \(\sqrt{1924}\), Chamonix\), \(\sqrt{1928}\), St Moritz\), \(\sqrt{1932}\), Lake Placid\), \(\lambda{1936}\), Garmisch-Partenkirchen\), \(\lambda{1948}\), St Moritz\), \(\lambda{1952}\), \(\lambda{1952}\), \(\lambda{1956}\), Cortina d'Ampezzo\), \(\lambda{1960}\), Squaw Valley\), \(\lambda{1964}\), Innsbruck\), \(\lambda{1968}\), Grenoble\), \(\lambda{1972}\), Sapport\), \(\lambda{1976}\), Innsbruck\), \(\lambda{1984}\), Sarajevo\), \(\lambda{1988}\), Calgary\), \(\lambda{1992}\), Albertville\), \(\lambda{1994}\), Lillehammer\), \(\lambda{1998}\), Nagano\), \(\lambda{2002}\), Salt Lake City\), \(\lambda{2006}\), Torino\), \(\lambda{2010}\), Vancouver\), \(\lambda{2014}\), Sochi\), \(\lambda{2018}\), PyeongChang\)\}
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 $\begin{array}{l} \lambda x \in \{\; y \mid y \text{ is a year }\} \; . \; \text{the site of the Winter Olympics in } x \\ \{\langle x,y \rangle \in \{\; z \mid z \text{ is a year }\} \times \{\; z \mid z \text{ is a city }\} \mid y \text{ is the site of the Winter Olympics in } x \; \} \end{array}$