Answer to Question #74709, Math / Discrete Mathematics

Suppose that during the most recent fiscal year, the annual revenue of Acme Computer was 138 billion dollars and its net profit was 8 billion dollars, the annual revenue of Nadir Software was 87 billion dollars and its net profit was 5 billion dollars, and the annual revenue of Quixote Media was 111 billion dollars and its net profit was 13 billion dollars. Determine the truth value of each of these propositions for the most recent fiscal year.

a) Quixote Media had the largest annual revenue.

Answer: false (the largest annual revenue had Acme Computer, 138 billion dollars)

b) Nadir Software had the lowest net profit and Acme Computer had the largest annual revenue.

Answer: true (5 billion dollars and 138 billion dollars respectively)

c) Acme Computer had the largest net profit or Quixote Media had the largest net profit.

Answer: true (Quixote Media had the largest net profit, 13 billion dollars)

d) If Quixote Media had the smallest net profit, then Acme Computer had the largest annual revenue.

Solution.

Let p is "Quixote Media had the smallest net profit" and q is "Acme Computer had the largest annual revenue".
We have: $p = false, q = true$
Then: $p \rightarrow q \equiv true$

Answer: true

e) Nadir Software had the smallest net profit if and only if Acme Computer had the largest annual revenue.

Solution.

Let p is "Nadir Software had the smallest net profit " and q is "Acme Computer had the largest annual revenue".
We have: $p = true, q = true$
Then: $p \leftrightarrow q \equiv true$

Answer: true