**Problem Set 3.1**

1. What is the main function of linear interpolation?
   1. Creating a linear relationship between two points
   2. Determining an unknown value on an existing line between two known points
   3. Extending a linear relationship beyond known data to predict the line’s behavior
   4. Making a graph for a report

Answer: B

1. A heat pump has the following output capacity at standard rated temperatures: 36,000 Btu/hr at 47°F and 20,000 Btu/hr at 17°F. The output capacity between those temperatures is a linear relationship. The design heating load of the home is 22,000 Btu/hr at 22°F. Determine the output capacity of the heat pump at the design temperature and if it is sufficient for this home.

Answer: Output capacity = 22667 Btu/hr. The capacity is sufficient for the home.