Interpreting Velocity-Time Graphs

The motion of a two-stage rocket is portrayed by the following velocity-time graph.
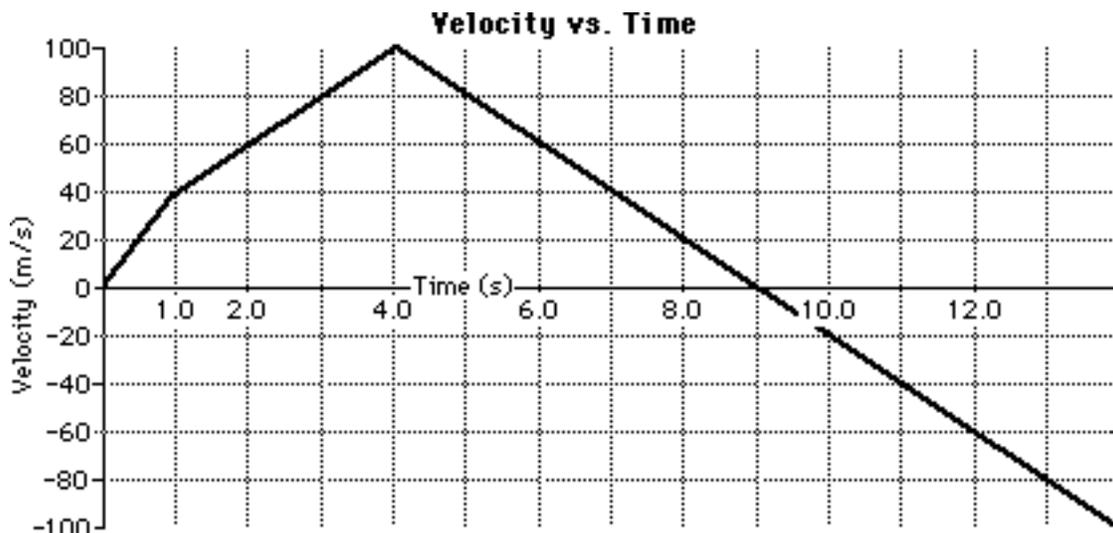
Several students analyze the graph and make the following statements. Indicate whether the statements are correct or incorrect. Justify your answers by referring to specific features about the graph.

Student Statement   **Correct? Yes or No**

1. After 4 seconds, the rocket is moving in the negative direction (i.e., down).

    Justification: _____   _____

    _____

2. The rocket is traveling with a greater speed during the time interval from 0 to 1 second than the time interval from 1 to 4 seconds.

    Justification: _____   _____

    _____

3. The rocket changes its direction after the fourth second.

    Justification: _____   _____

    _____

4. During the time interval from 4 to 9 seconds, the rocket is moving in the positive direction (up) and slowing down.

    Justification: _____   _____

    _____

5. At nine seconds, the rocket has returned to its initial starting position.

    Justification: _____   _____

    _____