**CALCULUS ACTIVITY**

**ANOTHER 20 MINUTE RIDE**

As a passenger in a car and armed with your trusty timepiece, take a 20 minute ride with a responsible adult. At the end of each minute, record your speed in mi/hr. Spend no more than half your time on the freeway and observe all traffic laws.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Time** | **0** | **1** | **2** | **3** | **4** | **5** | **6** |
| **Speed** |  |  |  |  |  |  |  |
| **Time** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| **Speed** |  |  |  |  |  |  |  |
| **Time** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
| **Speed** |  |  |  |  |  |  |  |

Plot your results on the grid below. Label the axes with the appropriate unit dimension. Let each horizontal unit be 1 minute and each vertical unit equal 5 mph.



1. What does the area under the graph represent? Be specific.

2. Use four trapezoids of equal width to approximate the area under the graph.

3. Use five Riemann sums with the mid-point rule to approximate the distance traveled.

4. Use five Riemann sums with left-hand values to approximate the distance traveled.

5. Use five Riemann sums with right-hand values to approximate the distance traveled.

6. What was the average speed over the 20 minutes?

7. Over what intervals did the velocity increase?

8. Over what intervals was the acceleration negative?

9. Over what intervals did the velocity decrease?