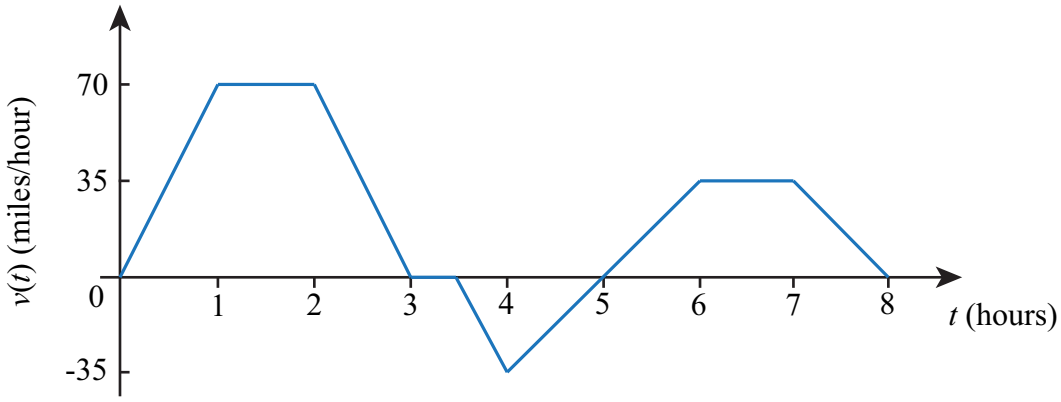
# Fundamental Theorem of Calculus I - Answers

The following graph shows the velocity of our friend Matt over an eight hour drive. Positive velocity indicates that the car is traveling north. After driving for one hour, Matt was 80 miles away from his house.




1. Find the velocity of the car after 30 mins.
   Ans: 35 miles/hr.

2. After 2 hrs how far was Matt from his home?
   Ans: 150 miles.

3. How far was Matt from his home at $t = 0$?
   Ans: 45 miles.

4. When and for how long did Matt stop driving?
   Ans: After 3 hrs for 30 mins.

5. How far did Matt drive before taking a break?
   Ans: 140 miles.

6. Which time intervals did he decceleraate?
   Ans: $(2, 3)$ , $(3.5, 4)$ and $(7, 8)$ hrs.

7. Find the distance covered by Matt while he was driving South.
   Ans: 21.25 miles.

8. How far was Matt from his home after 6 hrs?
   Ans: 216.25 miles.

9. Find the distance covered by Matt in the last hour.
   Ans: 17.5 miles.

10. Estimate $\int_0^8 |v(t)|dt$.
    Ans: 231.25 miles.

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