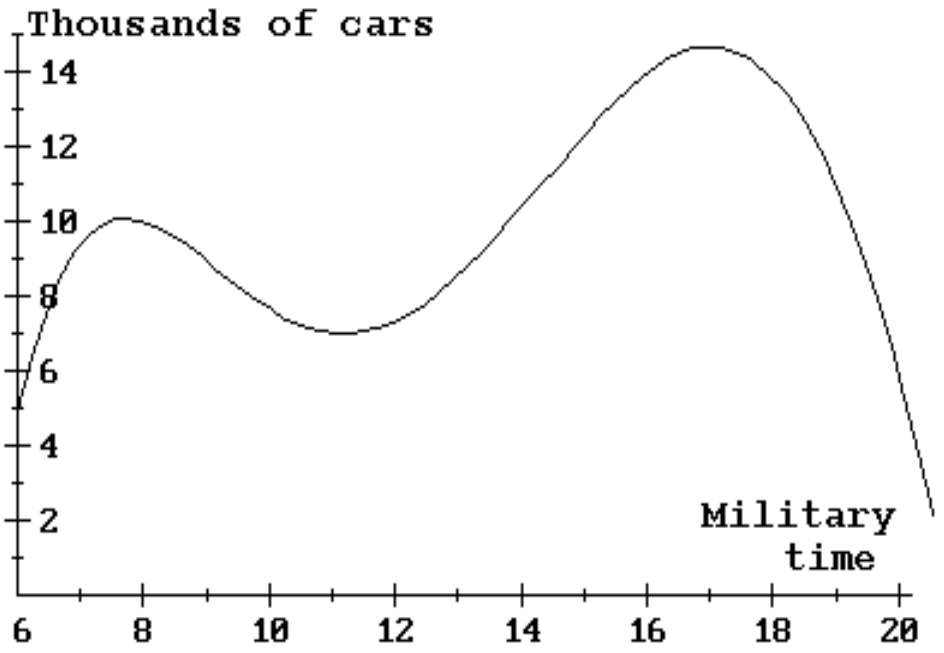
MATH 1306	***Spring 2007***	***Name*** _____	
Homework Handout #3		***Student ID*** _____	

1. The following graph shows the average number of cars (in thousands) traveling on the Gridlock Expressway in Gotham City during a typical weekday from 6 am to 8 pm (the input axis is marked off in military time). For example, military time 14 corresponds to 2 pm. Suppose C is the number of cars (in thousands) on this expressway at time t (military time).



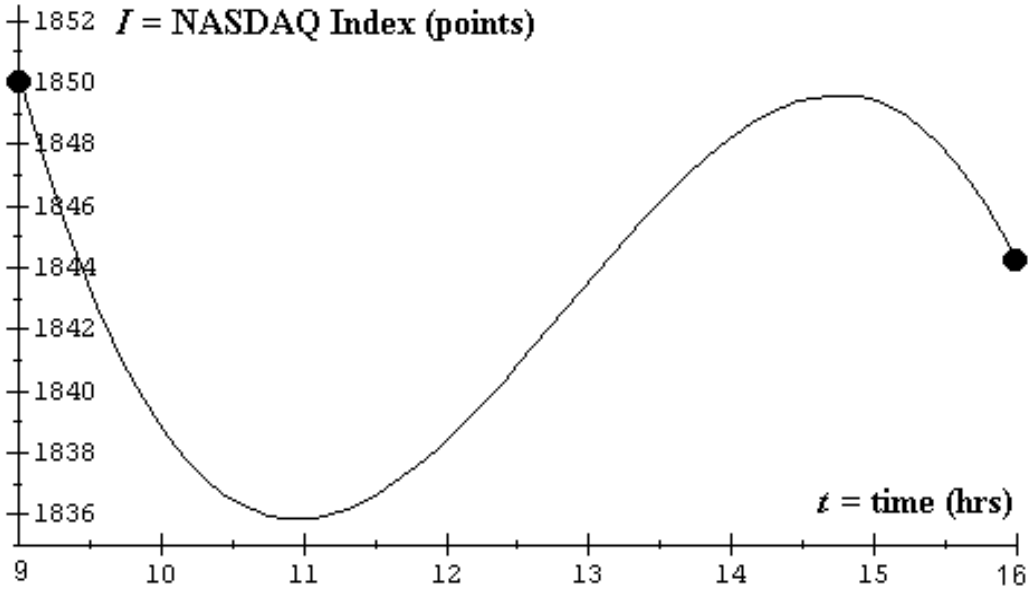
1a. Find the average rate of change of C from $t = 13$ to $t = 20$. ☐

1b. Interpret your answer from part 1a in the problem context using a complete sentence.

☐

1c. Calculate $C_{[6,8]} =$ ☐

2. The NASDAQ Composite Index is a numerical value that roughly measures the price of all stocks traded on the NASDAQ Stock Exchange. This exchange has become more important in recent years, since the stocks of many high-tech companies are traded there. The following graph depicts the value of the NASDAQ index (I) over the course of a recent trading day. The input axis is marked off in military time, where $t = 9$ corresponds to 9 am and $t = 16$ corresponds to 4 pm.



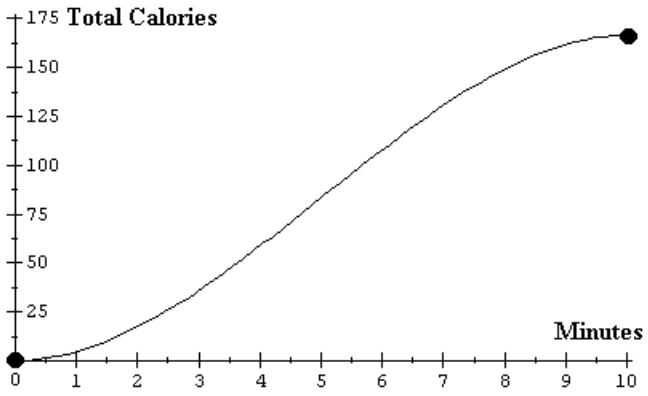
2a. Find the average rate of change of I from $t = 11$ to $t = 15$. ☐

2b. Interpret your answer from part 2a in the problem context using a complete sentence.

☐

2c. Compute $I_{[10.5,12.5]} =$ ☐

3. The Hard-Body Elliptical Crosstrainer fitness machine has an LCD display that graphs the total calories burned during a workout. Suppose the display appeared roughly as shown below after Imani's last workout on the machine. Let T be the total calories burned after m minutes of the workout.



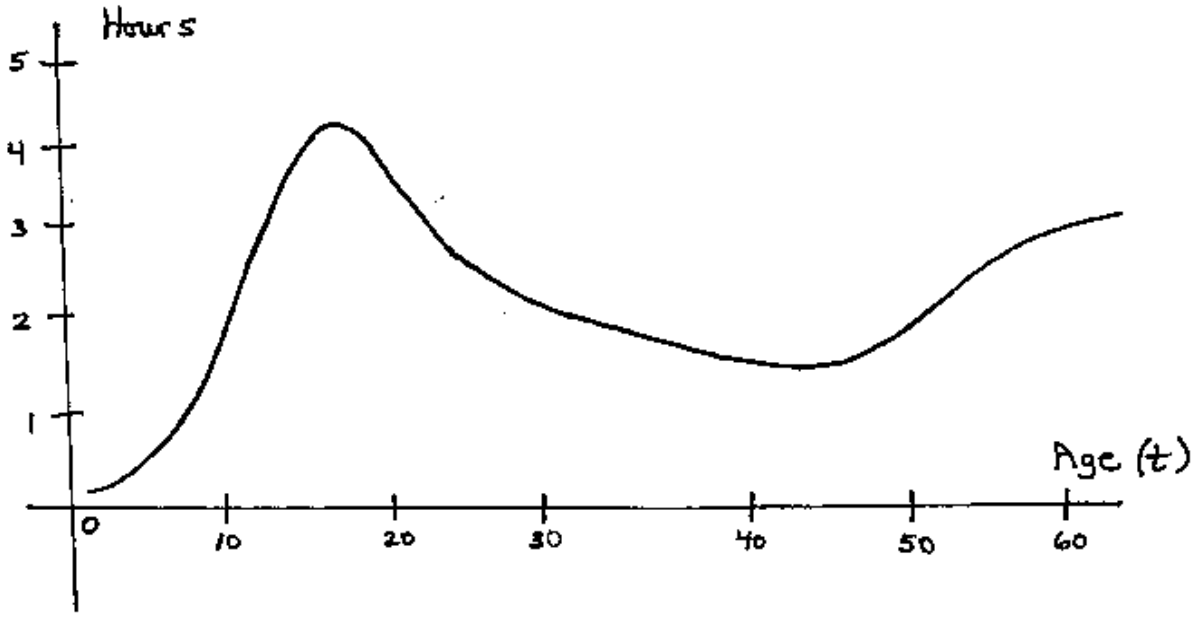
3a. Find the average rate of change of T from $m = 0$ to $m = 8$. ☐

3b. Interpret your answer from part 3a in the problem context using a complete sentence.

☐

3c. Compute $T_{[8,10]} =$ ☐

4. The function V graphed here depicts the number of hours each day typical Americans from age 3 years to age 60 years spend watching TV.



4a. Find the average rate of change of V from $t = 10$ to $t = 15$. ☐

4b. Interpret your answer from part 4a in the problem context using a complete sentence.

☐

4c. Compute $V_{[20,40]} =$ ☐

MATH 1306 – Handout # 3
Answers To Odd-numbered Problems

1a. Using approximate y-coordinates: at t = 13, y = 8.5 , and at t = 20, y = 5.5
Average rate of change from t = 13 to t =20 is -0.429

1b. On average, from 1 pm to 8 pm, the number of cars on the expressway decreased by 429 per hour.

1c. Using approximate y-coordinates: at t = 6, y = 5 , and at t = 8, y = 10
$C_{[6,8]} = 2.5$

3a. Using approximate y-coordinates: at m = 0, y = 0 , and at m = 8, y = 150
Average rate of change from m=0 to m=8 is 18.75

3b. On average, during the first eight minutes of Imani's workout, the total calories she burns increases by 18.75 calories per minute.

3c. Using approximate y-coordinates: at m = 8, y = 150 , and at m = 10, y = 166
$T_{[8,10]} = 8$