Math 162
Quiz 3

Justify all answers with neat and organized work. Clearly indicate your answers. 20 points possible

Units! Units! Units! Every answer should include the correct units. Also, in each question that asks for a sentence to interpret the answer, choose a good verb tense.

1. (4 pts.) Imagine that $P(t)$ equals the number of miles from an airport that a plane has flown after t hours. Write a sentence to interpret the following statement.

$$\frac{dP}{dt} = 250 \text{ when } t = 2$$

2. (6 pts.) The table below (based on data from the *Statistical Abstract of the United States*, Bernan Press, 1992 and 1994) gives the number of imported passenger cars (in thousands) sold in the United States from 1984–1992.

Year	Imported Passenger Car Sales
1984	2439
1985	2838
1986	3245
1987	3196
1988	3004
1989	2699
1990	2403
1991	2058
1992	1938

(a) Use the data to calculate the percentage change in import car sales from 1984 to 1992.

(b) Use the data to calculate the average rate of change in import car sales from 1984 to 1992.

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4. (6 pts.) The graph below (based on data from Card Companies, *Credit Card News*) shows the number of Visa credit cards (in millions) from 1985 to 1992.

(a) Estimate the rate of change in the number of credit cards in 1988. Write a sentence to interpret your answer.

(b) Estimate the percentage rate of change in the number of credit cards in 1988.

5. (4 pts.) (Based on data from *HIV/AIDS Surveillance 1992 Year End Edition.*) The number of AIDS cases diagnosed between 1988 and 1991 is modelled by $cases = -1049.5x^2 + 5988.7x + 33770.7$, where $x =$ the number of years since 1988.

Numerically estimate the derivative at $x = 1$ using the nearby point 1.01. (Give correct units.)