Spring, 1999
Peterson

MATH 124.

HOMEWORK 11.

DUE: Friday, April 16, 1999.

P1. A certain radioactive substance decays from 1000 grams to 999 grams in 8 years. What is the half-life of this substance?

P2. A one-time deposit of $3000 dollars is made into an account that pays an APR of 8.2% compounded continuously Five years later, the account is closed, and all of the money except for $1000 is used to open a new account that pays an APR of 7.9% compounded monthly. Assuming that no other deposits or withdrawals are made, what is the worth of the second account three years after it was opened?

P3. An object with a temperature of 50°F is placed in a refrigerator that is kept at a constant temperature of 20°F. Two hours later, the temperature of the object is 40°F.

(1) Let $A(t)$ be the temperature of the object t hours after the object is placed in the refrigerator. Find a good expression for $A(t)$, using Newton's Law of Cooling.

(2) What is the temperature of the object two hours after the temperature of the object was 40°F ?

(3) Approximately how long does it take for the temperature of the object to drop from 50°F to 25°F?

P4. An object is unearthed and is found to have about 8% of the carbon C14 content found in similar objects above ground today. Approximately how long ago was the object buried? (Take the Half-life of Carbon C14 to be 5730 years.)

P5. Do the computations necessary to determine exact values for the missing entries in the table

q (rad)	$\frac{p}{3}$		$\frac{11}{3}p$		$-\frac{7p}{6}$	
q (deg)		72°		240°		–300°

P6. On a circle of radius 5 feet, a circular sector has a central angle of 70°.

(1) Find the exact area of the sector.

(2) Find the exact arc length for the sector.