

Math 130

Spring 2001

This tantalizing 100-point, fifty minute test covers parts of chapters five of *Mathematics: a Practical Odyssey* by Johnson and Mowry; plus graph theory. Clearly indicate your answers. Use your time wisely. All parts of problems are five points unless otherwise indicated.

- 1.. Suppose Laura invests \$200,000 for 40 years at $6\frac{1}{2}\%$ interest. Find the future value of this investment if the interest is
 - a) simple,
 - b) compounded monthly,
 - c) compounded daily.

2. Mark wants to save \$45,000 dollars using an ordinary annuity over the next 12 years. The interest rate is 7%.
 - a) What will the monthly payments be? (10 points)

 - b) What will be the total of Mark's payments?

 - c) What will be the total interest?

3. Mitch bought a house for \$190,000. He put \$50,000 down and obtained a 6.5% 30 year amortized loan for the rest.
- a) What will the monthly payment be? (10 points)
- b) How much interest will Mitch pay the first month? (Simple interest, one month.)
- c) How of the principle will Mitch pay the first month?
- d) What will be the total amount of Mitch's payments?
- e) What will be the *total* interest Mitch pays?
- f) Mitch paid one point and \$1200 in fees that were included in the finance charge. Find the legal loan amount.
- g) Set up the first equation that you would solve to verify the company's claim that the APR rate is 6.75% (Do not solve. Hint: legal loan amount, APR + ???%)

4. Circle the words on the left which apply to the graph on the right.

Euler circuit
Euler path
Hamiltonian circuit
Hamiltonian path
Planar

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Hamiltonian circuit
Hamiltonian path
Planar

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5. Draw a map that requires four colors to color it.

6. Draw the graph that corresponds to the map you drew in the last problem.