COLLEGE ALGEBRA NAME: Holly Gasper

GPS # 32 **3.5** **EXPONENTIAL FUNCTIONS AND INVESTING II** Class Time: T/Th 11:30 Date: 3-13-08

Useful Guidelines:

* Future value of an investment with continuous Compounding:
  If P is the amount invested at an interest rate r per year, the future value S at the end of t years is $S = Pe^{rt}$, with continuous compounding.
* The interest earned on an investment is the future value minus the original investment.

20/20 Great job!

1. Suppose that P is invested in CD account in which interest r is compounded continuously at 6% per year. The amount A accumulated after t years is $A = Pe^{rt}$. Find A if \$4000 is invested for

a) 6 years

$A = Pe^{rt}$

$P = 4{,}000$
$r = .06$
$t = 6$

$A = 4{,}000e^{(.06)(6)}$

$A = 4{,}000e^{(.36)}$

\$ 5,733.32

b) 20 years

$A = Pe^{rt}$

$P = 4{,}000e^{(.06)(20)}$

$P = 4{,}000e^{(1.2)}$

\$ 13,280.47

2. a) What is the future value of \$2000 invested for 10 years at 9% compounded continuously?
   b) How much will be earned on this investment?

A) $A = Pe^{rt}$

$A = 2{,}000e^{(.09)(10)}$

$A = 2{,}000e^{(.9)}$

\$ 4,919.21

B) 4,919.21
- 2,000
\$ 2,919.21

3 Suppose that \$250,000 is invested at 8% interest.

a) Find the amount of money in the account after 8 years if the interest is compounded annually.
b) Find the amount of money in the account after 8 years if the interest is compounded continuously.

A) $S = P(1+r)^t$

$S = 250{,}000(1+.08)^8$

$S = 250{,}000(1.08)^8$

\$ 462,732.55

b) $S = Pe^{rt}$

$S = 250{,}000e^{(.08)(8)}$

$S = 250{,}000e^{(.64)}$

\$ 474,120.22