

Math 112 Worksheet #8
March 16, 2007

1. You win the state lottery and have the choice between a lump sum of \$7.5 million, paid immediately, or \$10 million paid continuously over 10 years. You can invest at an interest rate of 7% compounded continuously. Which option is better? What if the interest rate is 4%?
2. Suppose the number of pounds of apples purchased by the average household monthly is a function of the price of apples a per pound and the price of pears p per pound. (Apples purchased = $f(a, p)$) Values of f are given in the table below for particular prices of apples and pears.

Price of Pears p

	\$1.00	\$2.00	\$3.00
\$0.50	14	17	20
\$1.00	11	13	15
\$1.50	9	11	12

- (a) Find $f(1, 2)$ and interpret it in terms of the number of pounds of apples purchased.
 - (b) Is f an increasing or decreasing (or neither) function of a ? Is f an increasing or decreasing (or neither) function of p ?
 - (c) Estimate $f_a(1, 2)$ and $f_p(1, 2)$.
 - (d) Estimate $f(1.25, 1.5)$ given your answers to part (a) and (c).
3. If $f(x, y) = 2x^3 + 3xy^2 - 5y$, then which is greater, $f_x(1, 2)$ or $f_y(1, 2)$?