# Math 220 - Calculus f. Business and Management - Worksheet 38

## *Worksheet 38 - Investments and Money Flow*

***Exercise 1**: Calculate these one-time investment problems (use calculators to get an approximate answer).*

*1a) What is the value of a single investment of* $\$1000$ *at an interest rate of* $5\%$ *per year for a period of* $5$ *years?*

*1b) How much needs to be invested today at* $2\%$ *per year in order to have* $\$2000$ *after* $10$ *years?*

***Exercise 2**: Find the future value for these investments.*

*2a) How much will be in the bank if money is invested at a rate of* $\$200$ *per year for* $5$ *years at a rate of* $5\%$*?*

*2b) What is the future value of an investment of* $1000e^{.01t}$ *at a rate of* $3\%$ *for* $10$ *years?*

***Exercise 3**: Find the present value of both the investments in question 2.*

***Exercise 4**: Choose the correct formula to answer each of these questions.*

*a) A retiree decides to buy an annuity that will pay* $\$4000$ *per year for* $20$ *years. The interest rate on the annuity is* $6\%$*. How much will it cost to purchase this annuity?*

*b) A young couple puts* $\$10,000$ *in the bank for their child's education. At* $4\%$ *interest, how much will they have at the end of* $15$ *years?*

*c) Grandparents want to put some money in the bank for their grandchild's first car. How much money must they put in now in order to have* $\$12,000$ *in* $8$ *years? Interest rates are* $3\%$*.*

*d) A student begins saving at a rate of* $\$240e^{.02t}$ *per year. At an interest rate of* $5\%$*, how much will the student have after* $5$ *years?*