**College Mathematics**

review for Test 2: growth

You should be able to do the following things:

INCREASE/DECREASE as MULTIPLIER

- Know the meaning of percent.
- Understand and discuss percentages smaller than 1% or larger than 100%.
- Convert/interpret any numerical change as a
  - percent increase/decrease, percent of original, or multiplier.
- Know that
  - a P% increase is the same as multiplying by (1 + 0.01P)
  - a P% decrease is the same as multiplying by (1 - 0.01P)
- Given an amount, apply a percent increase/decrease to find the new amount.
- Given an amount including a percent increase/decrease, find the original amount.
- Given two or more percent increases/decreases, calculate the net effect of applying them successively.
- Explain why a P% discount followed by a Q% discount do not result in a (P+Q)% discount.
- Explain why a P% mark-up and a P% discount do not "cancel out" each other.

LINEAR and NON-LINEAR GROWTH

- Given a verbal description of a growth pattern, tell whether it is linear, exponential, or neither.
- Given a numerical description of a growth pattern, tell whether it is linear, exponential, or neither.
- Given information about a linear or exponential growth pattern, calculate any value in the pattern.

COMPOUNDING/EXPONENTIAL GROWTH

- Know the meaning of compounding (annually, quarterly, monthly, daily, hourly).
- Know the meaning of *effective* annual yield, or annual percentage yield (APY).
  - Given the interest rate and frequency of compounding, calculate the *effective* yield.
- Given the interest rate, frequency of compounding, and length of time of an investment, calculate the periodic interest rate and the number of periods.
- Given the interest rate, frequency of compounding, length of time, and present value of an investment, calculate the future value (FV).
- Given the interest rate, frequency of compounding, length of time, and future value of an investment, calculate the present value (PV).
- Discuss how changing the frequency of compounding affects the future value of an investment.

ANNUITIES & LOANS

- Know the meaning of annuity.
- Given the interest rate, frequency of payments, length of time, and the periodic payment (PMT) of an annuity, calculate the future value (FV) of the annuity.
- Given the interest rate, frequency of payments, length of time, and the future value of an annuity, calculate the periodic payment needed to achieve that future value.
- Know that a loan is an annuity in which the amount of the loan is the *present value*.of the annuity.
- Given the interest rate, frequency of payments, length of time, and the periodic payment of a loan, calculate the amount (PV) of the loan.
- Given the interest rate, frequency of payments, length of time, and the amount of a loan, calculate the periodic payment (PMT) needed to pay off the loan in the given time.