

**Review Sheet**

These are the only two formulas that will be given to you at the final.

**Savings Plan Formula** (for regular deposits into a savings account)

$$A = PMT \left( \frac{n}{APR} \right) \left[ \left( 1 + \frac{APR}{n} \right)^{nY} - 1 \right]$$

**Loan Payment Formula** (for regular payments on a loan)

$$PMT = P \frac{\left( \frac{APR}{n} \right)}{1 - \left( 1 + \frac{APR}{n} \right)^{-nY}}$$

The best review materials for the exam are

- i.* Quiz A, covering materials in the Diagnostic Test from the beginning of the semester
- ii.* Quiz 1-3, covering materials from Homework 1-4
- iii.* Exam 1
- iv.* Quiz 4-6, covering materials from Homework 5-8
- v.* Exam 2
- vi.* Homework 9

All of these materials can be found online at [http://math.utah.edu/~ wood/m1030s08](http://math.utah.edu/~wood/m1030s08)

## Topics

### 1. Simplifying Expressions:

Quiz A, Diagnostic Test, Homework #1.

### 2. Venn Diagrams:

Homework #1, Quiz #1,

Book: 1c #75-82.

### 3. Deductive Arguments:

Homework #2, Quiz #2,

Book: 1d #39-46.

### 4. Unit Conversions:

Homework #2, Quiz #2,

Book: 2a #52-56, 62-64, 76-78, 83-86; 2b #47, 67-68, 103-108

### 5. Percentages:

Homework #3, Quiz #2

Book: 3a #81-84,87-98

### 6. Scientific Notation:

Homework #4, Quiz #3

Book: 3b #39-40

### 7. Compound Interest: The following formulas are needed:

For interest that compounds  $n$  times per year,

$$A = P \left( 1 + \frac{APR}{n} \right)^n Y$$

For interest that compounds continuously,

$$A = Pe^{(APR)(Y)}$$

Homework #4, Quiz #3

Book: 4b #53-50, 65-78, 85-87

8. Annual Percentage Yield:

To compute the APY of an account, use the appropriate compound interest formula with  $P = 100$  and  $Y = 1$  to calculate the increase of a \$100 deposit for one year. Or, you can memorize the formulas:

For interest that compounds  $n$  times per year,

$$APY = 100 \left( 1 + \frac{APR}{n} \right)^n - 100$$

For interest that compounds continuously,

$$APY = 100e^{APR} - 100$$

Homework #4, Quiz #3

Book: 4b #61-64

9. Savings Plans:

Homework #5, Quiz #4

Book: 4c #45-58, 93-96

10. Loan Payments:

Homework #5, Quiz #4

Book: 4d #25-34, 39-42

11. Linear Modeling:

The formula necessary is

$$y = mx + b$$

where  $m$  is the slope and can be calculated using two values  $(x_1, y_1)$ ,  $(x_2, y_2)$  by

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Homework #6, Quiz #5

Book 9b #33-44

12. Exponential Modeling:

If you're given the doubling time, the formula is

$$Q = Q_0(2)^{t/T_{\text{double}}}$$

If you're given the half-life, the formula is

$$Q = Q_0\left(\frac{1}{2}\right)^{t/T_{\text{half}}}$$

If you're given the growth or decay rate, let  $r$  be the rate as a decimal with  $r$  positive for growth and  $r$  negative for decay. The formula you want is

$$Q = Q_0(1 + r)^t$$

In this situation, the doubling time or half life can be computed by

$$T_{\text{double}} = \frac{\log 2}{\log(1 + r)}$$

$$T_{\text{half}} = \frac{\log .5}{\log(1 + r)}$$

Homework #7, Homework #8, Quiz #6

Book: 9c #37-44, 49-57; 8b #39-42, 47-62

13. Lengths, Areas, Volumes:

Volumes:

sphere:  $\frac{4}{3}\pi r^3$   
cylinder:  $\pi r^2 h$   
box:  $lwh$

Areas:

circle:  $\pi r^2$   
rectangle:  $lw$   
triangle:  $\frac{1}{2}bh$

Homework #9

Book: 10A #63-71

14. Scaling Factors:

The scaling factor is calculated by

$$SF = \frac{\text{new length}}{\text{old length}}$$

The new areas (including surface areas) and volumes are calculated by

$$\text{new area} = (SF)^2(\text{old area})$$

$$\text{new volume} = (SF)^3(\text{old volume})$$

Homework #9

Book: 10a #78-84