CS 130
Midterm Review

What should you expect on the midterm?

- Two or Three worksheets to build
- Calculations (=4+A1/B2)
- Arithmetic, Comparison, Logical Operators
- Functions (AVERAGE, PMT, ...)
- Build a table (write a formula and drag it to fill the table)
- Build a Pie Chart
- Conditional Formatting
- IF()/OR()/AND()
- Goal Seek/What If Analysis
    - Placing comments in cells
- Named Cells
- Understand Order of Operations/Associativity
- Relative vs Absolute Cell Reference
- Cell Formatting
- Anything from the lecture notes is fair game. Please see me if you have questions.
- Finishing the homework before the Midterm would be an outstanding review.
- Linear Regression

Create an Excel Workbook called **PUNetIDMidtermReview** and solve the following problems:

Problem: Name your worksheet "Difference"

Create a worksheet that contains two columns of numbers (X,Y). The third column (Difference) is to display the difference between the two numbers as a positive number. Use an IF statement in the difference column.

	A	B	C	D
1	X	Y	Difference	
2	43	26	17	
3	75	17	58	
4	23	66	43	
5	87	41	46	
6	32	74	42	
7	17	82	65	
8	98	16	82	
9	68	85	17	

Problem: Name your worksheet "Wages"

	A	B	
1	Wage Calculator		
2			
3	Enter Hours Worked		
4	Enter Hourly Wage		
5			
6	Gross Pay Is		
7			

The user enters the hours they worked and their hourly wage. Any hours they work over 40 means they will make 1.5 times their normal wage for only the hours worked over 40. Compute their gross pay in cell B6. Working 35 hours at $5/hour is $175. Working 50 hours at $5/hour is $275.

Problem: Name your worksheet "Bacteria"

A certain type of bacteria increases based on the following model:
$B(t) = B(0) + 100e^{0.2197t}$ where t is time in hours and $B(0)$ is the starting population of bacteria.

Using Goal Seek, at what time can we expect there to be 1,000,000 bacteria when the starting population is 10. Give your answer to two decimal places.

Build a table with the columns, t, B(t) to show the growth of the bacteria until 1,000,000 bacteria exist. Draw a Line Chart to show this growth. Be sure to properly label your chart and data.

Problem: Name your worksheet "Investing"

After you graduate and get a job, you want to save enough money every year to have $1,000,000 when you retire. How much money would you need to save every month to have $1,000,000 after 45 years if you invest your money in an account that earns 5.5% yearly interest?

How much would you need to invest every month if you only get 4.5% yearly interest?

Problem: Name your worksheet "Retirement"

Congratulations! You saved up $1,000,000 by the time you retire! If, every year after you retire, you take $50,000 out of the account to live on, and earn 3% yearly interest on the money remaining, how many years can you go before the account is empty of money? (Note, take the money out of the account and then calculate the interest earned).

Build a nicely formatted table to solve this problem.

Problem: Name your worksheet "Fibonacci"

Part A: The first few fibonacci numbers are: 1,1,2,3,5,8,… where the first two numbers are always 1,1 and each subsequent number is found by adding the previous two. In one column, I would like you to find the first 12 fibonacci numbers. In another column, I would like you to find the first 12 solutions to the equation: y=x^2 over the interval 1<=x<=12 where x is an integer. You can use as many columns of data as you need.

Part B: You can only use two columns of data to solve the previous problem.

Problem: Name your worksheet "Pi"

Problem: An approximation for pi is 1/1 – 1/3 + 1/5 – 1/7 + 1/9 - …

Design a worksheet that displays the approximation for pi using the first 20 terms of the sequence

Question: Is it possible to rewrite the following IF function without using any ANDs or ORs? =IF(AND(A1>5,B1>10,C1,D1) If it is possible, then you have two IF statements that are logically equivalent. If it is possible, what test data do you need to run through both IF functions to make sure they do exactly the same thing (i.e. they are logically equivalent)?

Problem: Name your worksheet "Home Sales"

Problem: For a random number of selected homes sold in Washington County, the annual tax amount (in thousands of dollars) and selling price (in thousands of dollars) are as follows.

Taxes: 4.0 2.4 1.8 1.5 1.4 1.4 3.0 1.9

SellingPrice: 265 142 114 160 130 150 228 145

Part A: What is the independent variable and what is the dependent variable? Explain.

Part B: Perform a linear regression on the above data. Add a trendline and R2 value along with a proper title and x & y-axis labels.

Part C: What kind of correlation is represented by the graph?

Part D: What can someone expect their taxes to be for a house selling at $200,000?