COSC150 ICA 12Mar2020 Name/Pledged_____

1. For the purposes of this course, define "investigation."

2. Name at least three characteristics that transform an "investigation" into a "scientific investigation"?

3. A model that has at least one element of randomness can be described as _____.

4. A model whose behavior depends solely on its parameter values and the initial conditions can be described as _____.

5. "Small changes in the initial conditions leading to large or unpredictable changes in the observed behavior" describes what phenomenon: _____.

6. Models in a scientific investigation usually serve one or more of four main purposes. They are:

   a. E_____

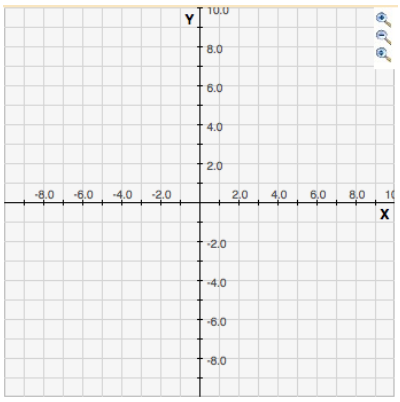
   b. P_____

   c. V_____

   d. A_____

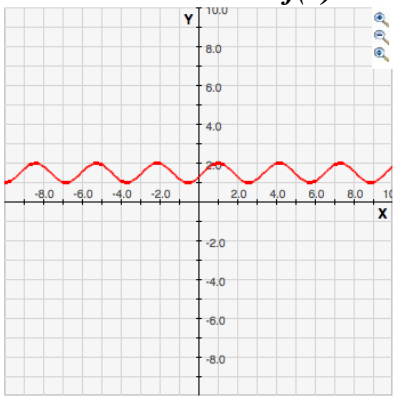
7. The Euler Method iterates models and systems using what simple equation?

8. Sketch a graph of $f(x) = 2x^2 + 4x + 6$



9. How would you represent the graph above in standard (vertex) form ($f(x)=a(x-h)^2+k$)? (that is, what are ***a***, ***h***, and ***k***?)

10. Consider the function: $f(x) = a*(cos(b*(x-c))) + d$



Sketch (and label) and/or describe the effect(s) of the following independent variations, keeping all other parameters constant:

a) Only making **a** larger

b) Only making **b** larger

c) Only making **c** larger

d) Only making **d** larger

11. Consider the following simple chart. Fill in the missing elements:

Change per unit time:	System behavior looks:
0	
	Linear
Linear in time	
Proportional to Population	

12. Suppose the ***rate of change*** in the population of rabbits on Wofford's campus all during the month of March was observed to be more or less constant. How would you best describe the expected observed population growth of rabbits on Wofford's campus?

13. Suppose there are 5 rabbits. If you take away 2 rabbits, how many rabbits would you have?

14. In class we listed more than a dozen uses of computers in a scientific investigation (in addition to *taking over the tedious, repetitious workload of iterative processes*). Name at least 3 uses you have learned about and give an example of how each has been used so far in at least one of the labs/explorations.

15. Joan digs a hole that is 2 yards wide, 2 yards long, and 2 yards deep. How many ***cubic feet*** of dirt are in the hole? (Reminder: there are 3 feet in 1 yard!)

16.(non-graded) The course has now completed 1 month, and we are now approaching "mid-term."

a. What is something new you have learned so far?

b. What is something that you would like to learn before the course is over?