Reading Questions for Section 3.1 Name _____

(18 pts) Due Date: _____

Bring this completed sheet with you to class on the due date to be handed in at the very beginning of the period.

(2) 1. Carefully read the first two sentences of **Section 3.1** and complete the blanks:
Exponential functions change at a constant _____,
while linear functions change at a constant _____.

(1) 2. Notice in Example 1 how the salary is computed from the previous year's salary.
Then give the salary for Year 5 (accurate to two decimal places.). _____

(1) 3. For the salary function in Example 1, report the **annual growth *factor*:** _____

(1) 4. For the salary function in Example 1, report the **annual growth *rate*:** _____

(1) 5. Circle True or False: The text reports the **growth factor per millenium** of the carbon-14 function from **Example 3** as 0.886, even though it is decreasing.
A. True
B. False

(1) 6. Suppose there was a row for $t = 4$ years in **Table 3.4**.
Would the salary be equivalent to $40{,}000(1.06)(1.06)(1.06)(1.06)$?
A. Yes
B. No

(1) 7. The box before on the page before **Example 4** states that and exponential function has the formula $f(t) = ab^t, b > 0$. The information in this box is VERY important. Read it carefully.
Which of these represents the **growth factor**? (Circle ONE)
A. a B. b C. t D. $f(t)$ E. r

(1) 8. In the equation, $f(t) = ab^t$, the constants a and b are called
A. static variables B. coefficients C. parameters D. arguments

Questions 9-11: Exponential function are of the form $f(t) = ab^t$, as long as $b > 0$ and b is not equal to 1.

(3) 9. For example, explore a function like $f(t) = (-1)^t$, where $b = -1$, by completing the table to the right. This function is too weird to be exponential!

t	$f(t) = (-1)^t$
odd integer, i.e., $t = \pm 1, \pm 3, \pm 5, \ldots$	
even integer, i.e., $t = 0, \pm 2, \pm 4, \pm 6, \ldots$	
fractions like $t = \pm\frac{1}{2}, \pm\frac{1}{4}, \pm\frac{1}{6}, \ldots$	

(3) 10. For example, explore a function like $f(t) = (1)^t$, where $b = 1$, by completing the table to the right.

t	$f(t) = (1)^t$
odd integer, i.e., $t = \pm 1, \pm 3, \pm 5, \ldots$	
even integer, i.e., $t = 0, \pm 2, \pm 4, \pm 6, \ldots$	
fractions like $t = \pm\frac{1}{2}, \pm\frac{1}{4}, \pm\frac{1}{6}, \ldots$	

(1) 11. The function $f(t) = (1)^t$ is not exponential. To what kind of family of function does it belong?
A. linear B. quadratic C. logarithmic D. power

(1) 12. In **Section 3.1**, which of these functions are concave up? (Select **ALL** correct answers.)
A. The salary function in **Example 1**.
B. The population of Mexico in **Example 2.**
C. The amount of carbon-14 remaining in **Example 3.**
D. The Yonkers fine in **Example 8.**

(1) 13. In **Example 8**, suppose the fine started out at $100 but **tripled** every day instead of *doubled*.
What would then be the formula
in part (b)? _____