

Stony Brook
STATE UNIVERSITY OF NEW YORK
MAT 122 Midterm I – Week of March 14, 2011

Score
Section I: _____
Section II: _____
Total off: _____
Percent: _____

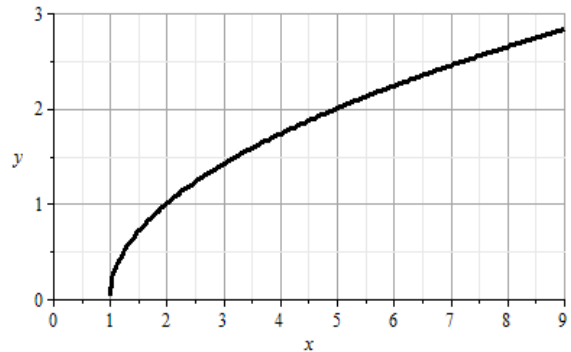
Last Name: _____ First Name: _____ Recitation: R_____

Section I: Write the answers to the following questions in the spaces provided. Little or no partial credit will be given. [2 points each].

1. _____ In the graph at the right, find $f(2)$

2. _____ If $f(x) = \ln(x) + 1$ find $f(e^2)$.

3. _____ Write an equation of the line through the points (2, 2) and (4, 3). Leave your answer in “y =” form.



4. slope: __ y-int: __ Determine the *slope* and *y-intercept* of the line whose equation is $3x - 2y = 6$

5. _____ Find the *average rate of change* of the function $g(x) = x^3$ over the interval $x = 0$ to $x = 2$

6. _____ Water is being circulated through a filter system. The number of grams of contaminant remaining in the pipe after t hours is given by the equation $d(t) = 200(.23)^t$ How many grams remain after 3 hours? Give your answer correct to the nearest hundredth.

7. _____ Solve the equation $2^x = 5$ for x and leave the answer correct to the nearest thousandth.

8. _____ If \$4,200 is invested in an account paying 4% compounded annually, how much is in the account at the end of 13 years, to the nearest cent

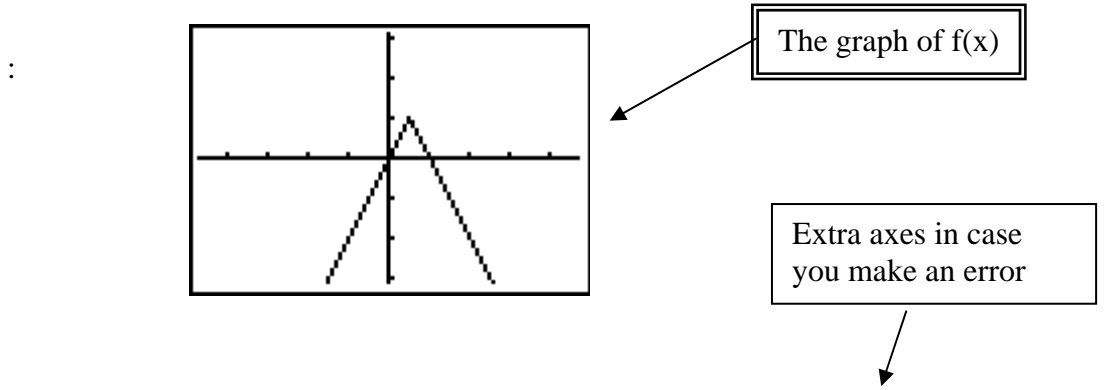
9. _____ If \$4,200 is invested in an account paying 4% compounded continuously, how much is in the account at the end of 13 years, to the nearest cent

10. _____ Write in *exponential form*: $2 = \log_3 k$

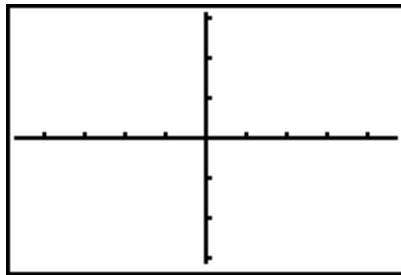
11. _____ Write in *log form*: $5 = e^x$

12. _____ If $f(x) = x - 2x^2$ and $g(x) = 3x$ find an equation for the function $(f \circ g)(x)$. Simplify your answer.

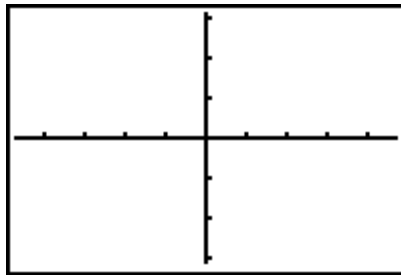
Directions: For questions 13, 14 and 15 sketch the function specified on the given axes based on the graph of $f(x)$ given below.



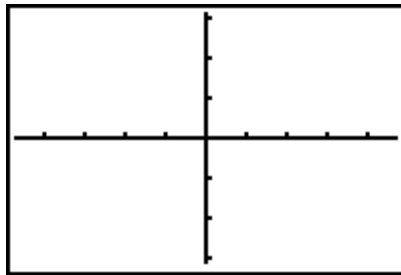
13. $-f(x) - 1$



14. $f(x - 2)$



15. $f(-x)$



Section II: Answer each question in the space provided. Show all work not done on the calculator. Circle your final answer. [10 points for each part, a) and b)]

16. Below is a table showing the values of three functions $y_1(x)$, $y_2(x)$ and $y_3(x)$. One is *linear*, one is *exponential* and one is neither. Answer the questions below for each function.

X	Y ₁	Y ₂	Y ₃
0.0000	4.0000	0.0000	1.0000
1.0000	2.4000	.6931	1.7500
2.0000	1.4400	1.0986	2.5000
3.0000	.8640	1.3863	3.2500
4.0000	.5184	1.6094	4.0000
5.0000	.3110	1.7918	4.7500
6.0000	.1866	1.9459	5.5000

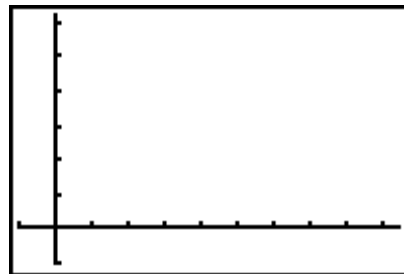
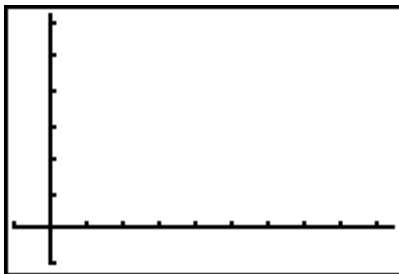
a) Which function is *linear*? Why? What is its equation?

b) Draw its graph on the axes below using the given window.

```

WINDOW
Xmin=-1
Xmax=9.4
Xscl=1
Ymin=-1
Ymax=6.2
Yscl=1
Xres=█
    
```

Extra grid



c) Which function is *exponential*? Why? What is its equation?

d) Draw its graph on the axes below using the given window.

```
WINDOW
Xmin=-1
Xmax=9.4
Xscl=1
Ymin=-1
Ymax=6.2
Yscl=1
Xres=█
```

