MONTGOMERY COLLEGE
Department of Mathematics
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MA 103 Dr. Katiraie Practice Problems for Quiz 6

1. Assume $1000 is deposited in an account that earns 5% interest compounded annually.

a. Find a formula for g(t) where t is time and g(t) is the amount of money in the account after **t years.**

b. How long will it take for the money to double.

2. Find the inverse of the following functions

a. $f(x)=2^x$ b. $g(x)=\log(x)$

3. Assume that the growth of the population of bacteria doubles every hour. The colony of bacteria start out with 100 bacteria. Let f(t) represent the population of bacteria at time t,
where **t is in hours.**

a. Find the formula for f(t)

b. Predict when there will be 100,000 bacteria.

4. The following table represents an exponential function of the form $y = ab^x$.
Find the value of a and b, and write the formula for the function in the form $y = ab^x$.
(Please show all the mathematical steps very clearly)

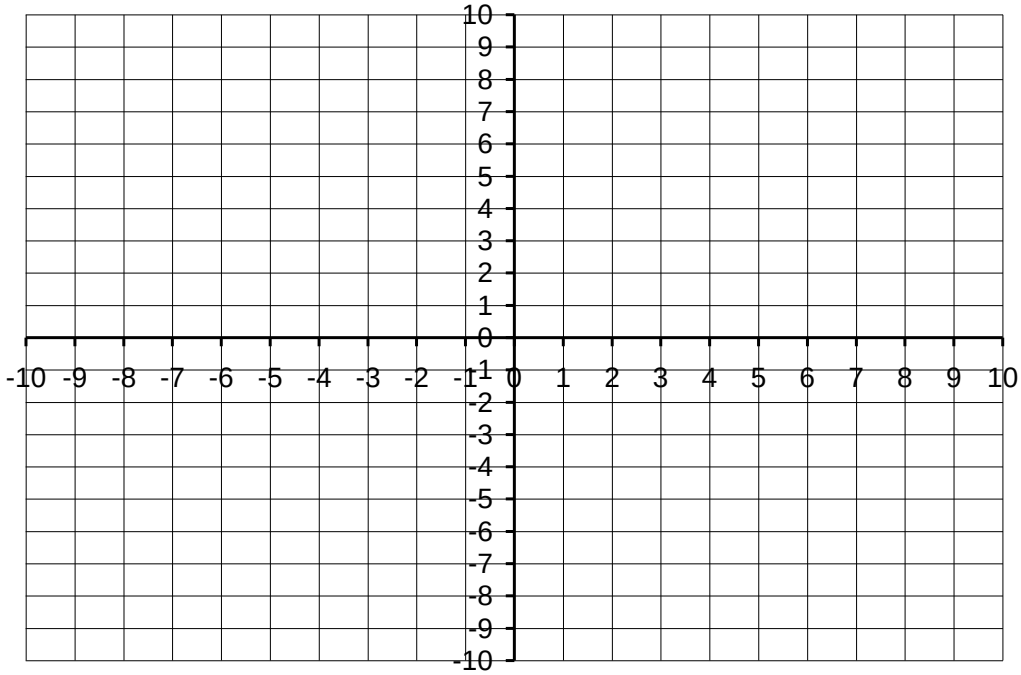
x	y
1	10
2	2
3	2/5
4	2/25
5	2/125

5. Let $f(x)=(5)^x$ Evaluate f at the indicated values.

a. $f(0)$ b. $f^{-1}(125)$

a. Find x when $f(x)=\frac{1}{25}$

6. Graph $f(x)=2(1.4)^x$ on the grid below.



7. Some values for the function f is shown in the table below.

x	1	2	3	4	5	6	7
$f(x)$	0	1	2	6	15	37	90

a. Find $f(2)$ b. Find $f^{-1}(6)$

8 a) Write the equation $a^b = c$ in logarithmic form.

8b) Write the equation $\log_7(343) = 3$ in exponential form.

9. Find the inverse of the following functions

a. $f(x) = 2x - 5$

b. $g(x) = \log(x)$ c. $h(x) = 5^x$

10. Solve the following analytically.

a) $4(3)^x = 78732$

b) $7^x - 256 = 0$

c) $\ln(x) = 3$

d) $2e^x = 3$

11. Assume that the growth of the population of bacteria triples every hour. The colony of bacteria start out with 100 bacteria. Let f(t) represent the population of bacteria at time t, where **t is in hours**.

a. Find an equation for f(t).

b. Predict the number of bacteria after 2 hours.

c. Predict the number of bacteria after 150 **minutes**

d. Predict when there will be 500,000 bacteria.

12.What is the domain of the following (In Interval Notation)

$f(x)=(5)^x$	$g(x)=\log(x)$
$f(x)=\frac{1}{25}$	$f(x)=\frac{2x-3}{4x+5}$
$g(x)=\ln(x)$	$f(x)=e^x+3$