

Standard 5 Practice Quiz C

MA 109

Print Your Name: Solutions ID: _____

Be sure that the ID number above is your correct 8-digit student ID number (without the leading 9). If this number is incorrect or not legible, it will take longer to process your score on this quiz.

This is practice for an in-class assessments on Standard 5. The only technology allowed during this quiz is a 4-function calculator. No notes or books may be used. This is an individual quiz, so any work done here must be entirely your own work.

Show all of your work. Your work will be graded on both accuracy and completeness, and partial credit is possible. You have 20 minutes to take this quiz.

Be sure to complete both the questions on this page and those on the back of this page.

1. Suppose the populations of a few towns are given by the equations in the table to the right.

Town	Population Equation
Town A	$976(0.97)^x$
Town B	$707(0.14)^x$
Town C	$888(1.83)^x$
Town D	$719(1.13)^x$
Town E	$744(0.24)^x$
Town F	$616(1.55)^x$

- a) Which town has the **largest** initial population?

- Town A **976**
- Town B **707**
- Town C **888**
- Town D **719**
- Town E **744**
- Town F **616**

- b) Which towns are **growing**? Select all that apply.

- Town A
- Town B
- Town C
- Town D
- Town E
- Town F

positive rate

- c) Which town is **growing the fastest**?

- Town A **-3%**
- Town B **-86%**
- Town C **83%**
- Town D **13%**
- Town E **-76%**
- Town F **55%**

biggest positive rate

$0.97 - 1 = -0.03$
 $0.14 - 1 = -0.86$
 $1.83 - 1 = 0.83$
 $1.13 - 1 = 0.13$
 $0.24 - 1 = -0.76$
 $1.55 - 1 = 0.55$

2. Simplify each expression below as much as possible. Write your answer in the answer box.

$$\begin{aligned} \text{d) } \ln\left(\frac{1}{e^5}\right) &= \ln(e^{-5}) \\ &= \log_e(e^{-5}) \end{aligned}$$

Answer:

$$-5$$

$$\text{e) } 9^{\log_9(14)}$$

Answer:

$$14$$

$$\begin{aligned} \text{f) } \log_2(8^5) &= \log_2((2^3)^5) \\ &= \log_2(2^{15}) \end{aligned}$$

Answer:

$$15$$

3. Suppose $g(x) = 4 \log_7(\underline{3+x}) - 2$. Write the **equation** for the asymptote of $g(x)$. Write your answer in the answer box below.

asymptote of log is VA where inside = 0

$$\begin{aligned} \underline{3+x} &= 0 \\ -3 \quad \quad -3 \\ x &= -3 \end{aligned}$$

Note: you must include the "x=" in order to earn full credit

Answer:

$$x = -3$$