

2.5.A Exponential Function Context and Data Modeling

AP Precalculus

Name: _____

CA #1

Below is a table of values for exponential functions in the form $f(x) = a(b)^x + k$. Write the equation that represents each table.

1.

x	0	1	2	3	4
$f(x)$	7	16	34	70	142

2.

x	0	1	2	3	4
$f(x)$	4	13	49	193	769

3. Mr. Sullivan left out his Pico-Chile-Mucho-Caliente salsa, and it is starting to grow mold. The table below gives the area of the mold, in square centimeters, at time t days.

Day (t)	1	3	6	8
Area (square centimeters)	0.5	2	10	23

- Use an exponential regression $A(t) = ab^t$ to model these data. Round to three decimals but store the original equation in your calculator.
- According to the model in your calculator, how large will the surface of the mold be after 7 days?
- According to the model in your calculator, how large will the surface of the mold be after 10 days?
- When will the area of the mold reach 34 cm^2 ?

4. Mr. Kelly has agreed to take over The Algebros social media accounts, and he feels the best way to grow it is by regularly posting his infinite amount of dad jokes. Below is a table of values for the number of followers The Algebros have for selected values of m , in months, since Mr. Kelly takes over the accounts.

Month	1	4	9	14	24
Followers	500,000	310,000	200,000	150,000	75,000

- Use an exponential regression $F(m) = ab^m$ to model these data. Round to three decimals but store the original equation in your calculator.
- According to the model in your calculator, how many followers will The Algebros have after 1 year? (round to the nearest whole number)
- When will there be 100,000 followers?
- When will there be 50,000 followers?

Answers to 2.5.A CA #1

1. $f(x) = 9(2)^x - 2$	2. $f(x) = 3(4)^x + 1$	3a. $y = 0.335(1.725)^x$ 3b. 15.233 3c. 78.164 4d. $x = 8.473$ days	4a. $y = 459,604.662(0.925)^x$ 4b. 179,498 4c. 19.466 months 4d. 28.313 months
------------------------	------------------------	--	---