

This key should allow you to understand why you choose the option you did (beyond just getting a question right or wrong). More instructions on how to use this key can be found [here](#).

If you have a suggestion to make the keys better, please fill out the short survey [here](#).

Note: This key is auto-generated and may contain issues and/or errors. The keys are reviewed after each exam to ensure grading is done accurately. If there are issues (like duplicate options), they are noted in the offline gradebook. The keys are a work-in-progress to give students as many resources to improve as possible.

1. A town has an initial population of 50000. The town's population for the next 9 years is provided below. Which type of function would be most appropriate to model the town's population?

| Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Pop | 50055 | 50097 | 50147 | 50205 | 50255 | 50297 | 50347 | 50405 | 50455 |

The solution is Non-Linear Power, which is option A.

- A. Non-Linear Power

This suggests a growth faster than constant but slower than exponential.

- B. Linear

This suggests a constant growth. You would be able to add or subtract the same amount year-to-year if this is the correct answer.

- C. Logarithmic

This suggests the slowest of growths that we know.

- D. Exponential

This suggests the fastest of growths that we know.

- E. None of the above

Please contact the coordinator to discuss why you believe none of the options model the population.

General Comment: We are trying to compare the growth rate of the population. Growth rates can be characterized from slowest to fastest as: logarithmic, indirect, linear, direct, exponential. The best way to approach this is to first compare it to linear (is it linear, faster than linear, or slower than linear)? If faster, is it as fast as exponential? If slower, is it as slow as logarithmic?