

Algebra 2 - Exponential Growth and Decay - Test

Common Core F-LE.A.2, F-LE.B.5, A-SSE.B.3c, F-IF.C.8b · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

This 45-minute test on exponential growth and decay has 9 questions worth 20 points in total. The questions move from direct skills to multi-step problems. Show your work, because partial credit is given for a correct setup and sound reasoning.

About this test

- Grade: Algebra 2
- Chapter: Exponential Growth and Decay
- Standards: F-LE.A.2, F-LE.B.5, A-SSE.B.3c, F-IF.C.8b
- Time: 45 minutes
- Total: 20 points

Question 1 - Identify and evaluate [2 pts]

For $f(x) = 6(0.5)^x$, state whether it is growth or decay and find $f(3)$.

Question 2 - Table to function [3 pts]

x	0	1	2	3
f(x)	4	12	36	108

Values of f.

Write an exponential function for the table and find $f(5)$.

Question 3 - Percent growth [2 pts]

A city of 8,000 people grows 6% per year. Write a function and find the population after 3 years.

Question 4 - Compound interest [3 pts]

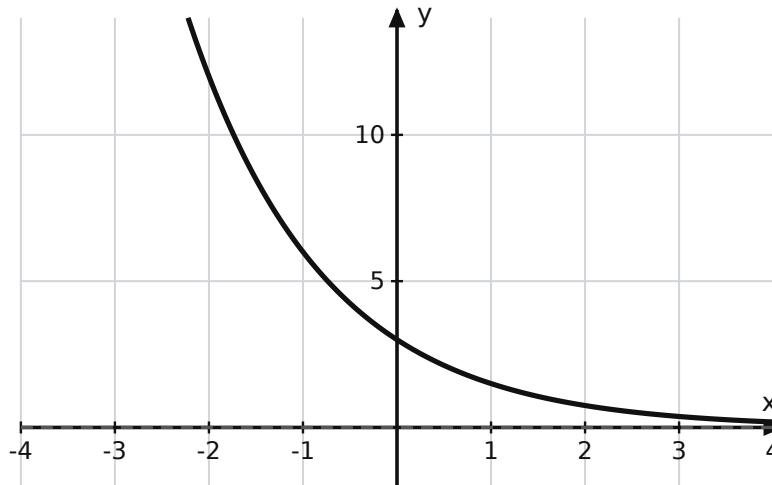
Mei invests \$3,000 at 6% for 4 years. Find the balance if the interest is compounded (a)

annually and (b) quarterly.

Question 5 - Half-life [2 pts]

A radioactive sample of 200 g has half-life 5 years. How much remains after 15 years?

Question 6 - Graph features [2 pts]



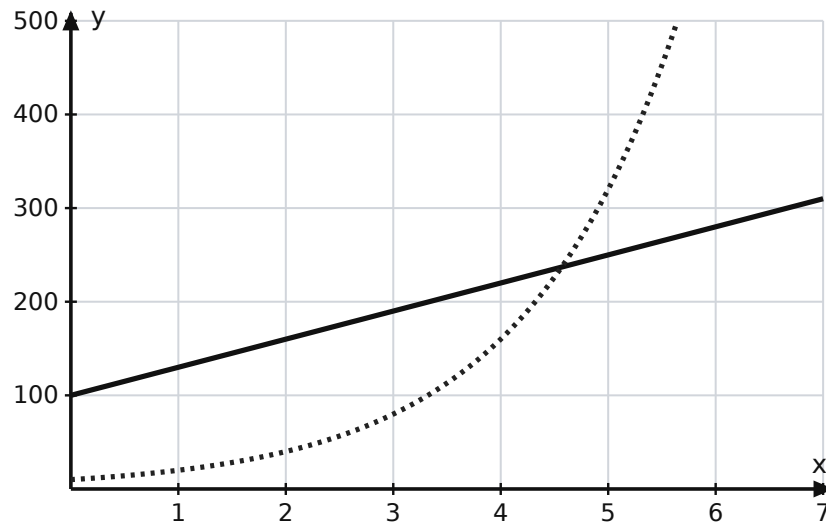
Graph of an exponential function.

The graph of $f(x) = 3(0.5)^x$ is shown. Give its y-intercept, asymptote, and end behavior as x increases.

Question 7 - Equivalent rate [2 pts]

A bank pays 0.5% per month, so a balance grows as 1.005^{12t} . Rewrite it as b^t and find the annual rate to the nearest tenth of a percent.

Question 8 - Linear versus exponential [2 pts]



Plan A (solid) and Plan B (dashed).

Plan A is $A = 100 + 30w$ and Plan B is $B = 10 \cdot 2^w$. Use the graph or a table to find the first whole week when Plan B is larger.

Question 9 - Find the error [2 pts]

Jamal says $f(x) = 500(0.9)^x$ loses 0.9% each step. Explain the error and give the correct rate.