

Precalculus - Exponential Functions and the Number e - Test

Common Core F-LE.A.2, F-IF.C.8b, F-LE.B.5, F-IF.C.7e · maths-pdf.fr/en/

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

This 20-point test covers exponential growth and decay, graphs, compound interest and a half-life model (F-LE.A.2, F-IF.C.8b, F-LE.B.5). You have 45 minutes. Show your work.

About this test

- Grade: Precalculus
- Chapter: Exponential Functions and the Number e
- Standards: F-LE.A.2, F-IF.C.8b, F-LE.B.5, F-IF.C.7e
- Time: 45 minutes
- Total: 20 points

Question 1 - Evaluate and classify [2 pts]

For $f(x) = 250(0.8)^x$, find $f(3)$ and state whether it is growth or decay and the percent rate.

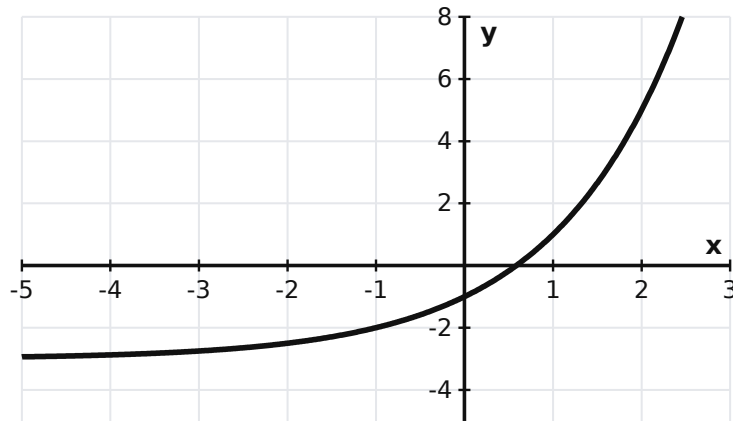
Question 2 - Write from points [2 pts]

Write the exponential function through $(0,4)$ and $(2,36)$.

Question 3 - Population model [2 pts]

A city of 12,000 grows 2.5% per year. Write the model and find the population after 8 years to the nearest person.

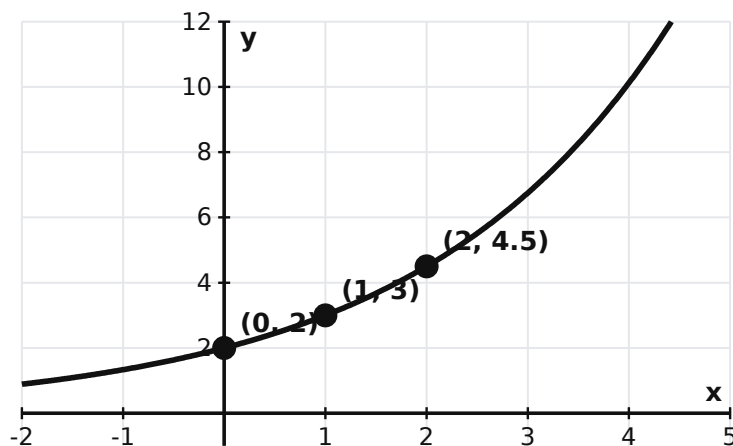
Question 4 - Features of a transformed graph [2 pts]



Graph of $y = 2^{(x+1)} - 3$.

For $y = 2^{x+1} - 3$, state the horizontal asymptote and the y -intercept.

Question 5 - Model from a graph [3 pts]



An exponential graph.

(a) Find a and b in $f(x) = ab^x$. (b) State the percent growth rate. (c) Find $f(4)$.

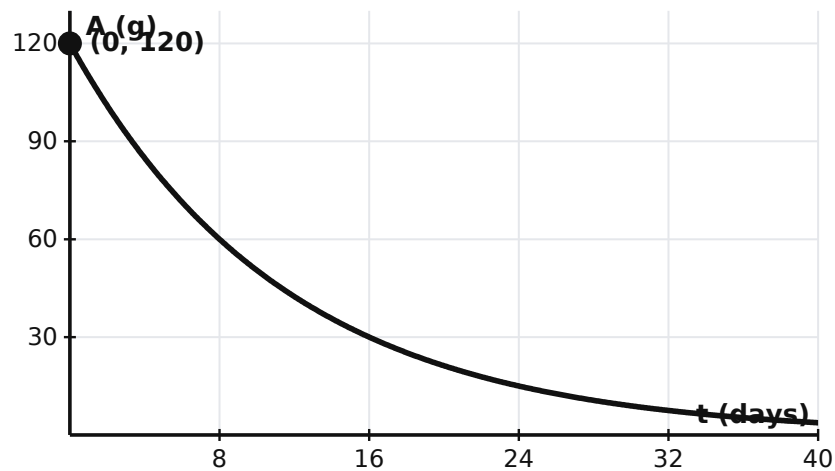
Question 6 - Compound interest [2 pts]

Find the value of \$3,000 at 6% compounded monthly for 5 years.

Question 7 - Continuous compounding [2 pts]

Find the value of \$1,500 at 4% compounded continuously for 10 years.

Question 8 - Half-life [3 pts]



Decay of an iodine sample.

A sample of 120 g of iodine has a half-life of 8 days, so $A(t) = 120\left(\frac{1}{2}\right)^{t/8}$. (a) Find $A(24)$. (b) Find $A(4)$ to the nearest hundredth. (c) Find t when $A = 60$.

Question 9 - Which earns more? [2 pts]

After 10 years, which is greater: \$1,000 at 6% compounded yearly, or \$1,000 at 5.9% compounded continuously? Compute both.