

Precalculus - Exponential and Logarithmic Equations - Test

Common Core F-LE.A.4, F-BF.B.5, A-REI.D.11 · maths-pdf.fr/en/

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

This 20-point test covers exponential and logarithmic equations, extraneous solutions and applications to savings and decay (F-LE.A.4, F-BF.B.5, A-REI.D.11). You have 45 minutes. Show your work.

About this test

- Grade: Precalculus
- Chapter: Exponential and Logarithmic Equations
- Standards: F-LE.A.4, F-BF.B.5, A-REI.D.11
- Time: 45 minutes
- Total: 20 points

Question 1 - Exponential equations [2 pts]

Solve (a) $3^{x+2}=81$; (b) $7^x=50$ to three decimal places.

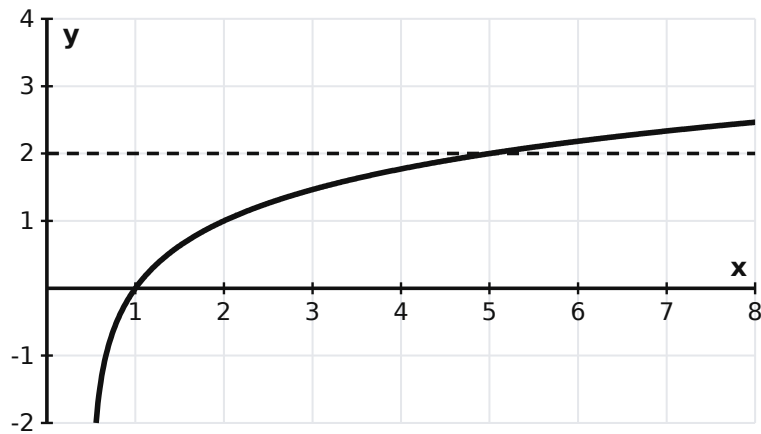
Question 2 - Base e equation [2 pts]

Solve $e^{3x}=20$ to three decimal places.

Question 3 - Isolate the power [2 pts]

Solve $5 \cdot 2^x = 70$ to three decimal places.

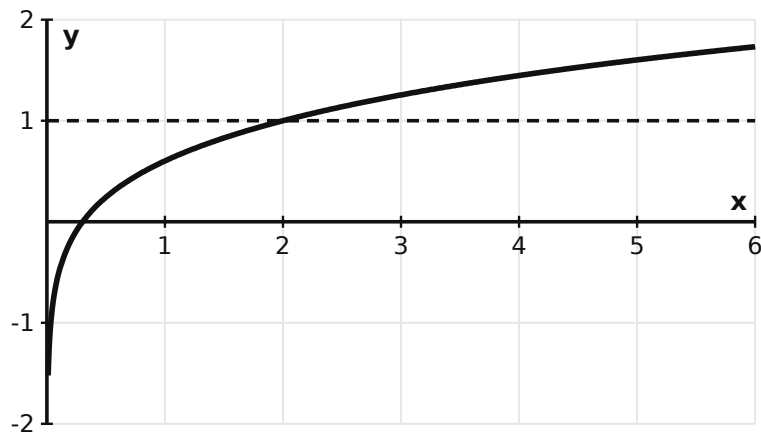
Question 4 - Log equation [2 pts]



Graph of $y = \log \text{ base } 3 \text{ of } (2x - 1)$ and $y = 2$.

Solve $\log_3(2x-1)=2$.

Question 5 - Combine and check [3 pts]



Graph of $y = \log x + \log(x + 3)$ and $y = 1$.

Solve $\log x + \log(x+3)=1$. (a) Combine the logarithms. (b) Solve the resulting equation. (c) Check each solution.

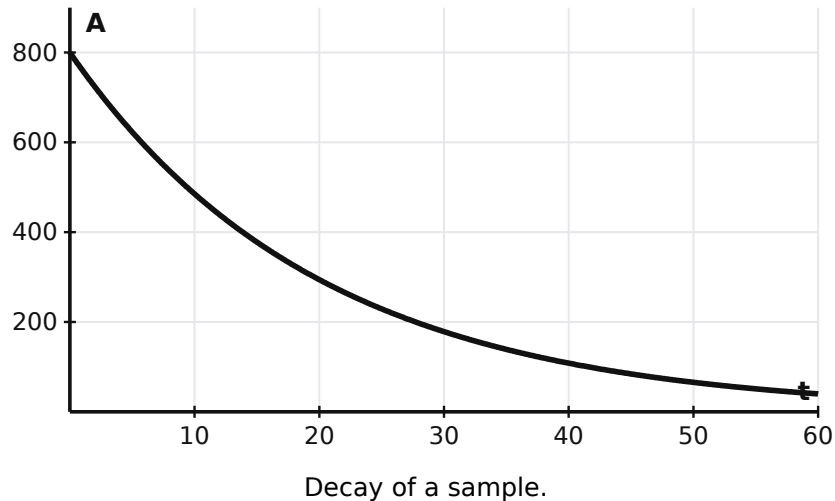
Question 6 - Two logs equal [2 pts]

Solve $\ln x + \ln(x-2) = \ln 15$.

Question 7 - Savings goal [2 pts]

How long will it take \$2,500 at 4% compounded yearly to grow to \$4,000? Give the answer to the nearest hundredth.

Question 8 - Radioactive decay [3 pts]



A sample decays by $A(t) = 800e^{-0.05t}$ grams after t days. (a) Find $A(10)$ to the nearest tenth. (b) When does the mass reach 400 g? (c) When does it reach 100 g? Give answers to the nearest hundredth.

Question 9 - Different bases [2 pts]

Solve $3^{x-1} = 2^x$ to three decimal places.