

Review for Exam 4

MA 105

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- 1) Solve the equation $2^{2x-1} = 8$.

- 2) Use transformations to graph $f(x) = 2^{-x} - 2$. Identify its horizontal asymptote, domain, and range.

- 3) Find the exact value of $\ln e^{-\pi}$

- 4) The half-life of radium is 1690 years. If 400 grams are present now, how many grams will be present in 1700 years?

- 5) Write $\log_2 x + \pi \log_2 y$ as a single expression.

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

- 7) Find the exact value of $\log_{0.5}(2^{-5})$.

- 8) Find $f(g(x))$ and $g(f(x))$ to determine if the two functions are inverses. Here, $f(x) = \frac{1}{2}(x - 3)$ and $g(x) = 2x + 3$.

- 9) Find f^{-1} and the domain and range of f , where $f(x) = \frac{2x+1}{x-1}$.
- 10) Given $f(x) = \ln(x - 2)$, graph f and f^{-1} , find the domain and range of f , find the vertical asymptote of f , and write the equation for f^{-1} .
- 11) Find the domain of $f(x) = \ln \frac{x^2-1}{x-2}$.
- 12) Find the value of $\log_{1/5} 625$.
- 13) Describe the horizontal line test. What is it used to determine? Draw a function that satisfies the horizontal line test and one that does not.
- 14) Solve $\log x + \log(x - 30) = 3$.
- 15) Solve $2^{5-3x} = 7^{-x}$.
- 16) How much is a £750 investment worth after 18 months invested at an annual rate of 25