

Name: \_\_\_\_\_

Student #: \_\_\_\_\_

Date: \_\_\_\_\_

T.A. #: \_\_\_\_\_

**Mathematics 12 Pre-Calculus  
LEARNING GUIDE 13 TEST  
EXPONENTIAL FUNCTIONS & EQUATIONS**

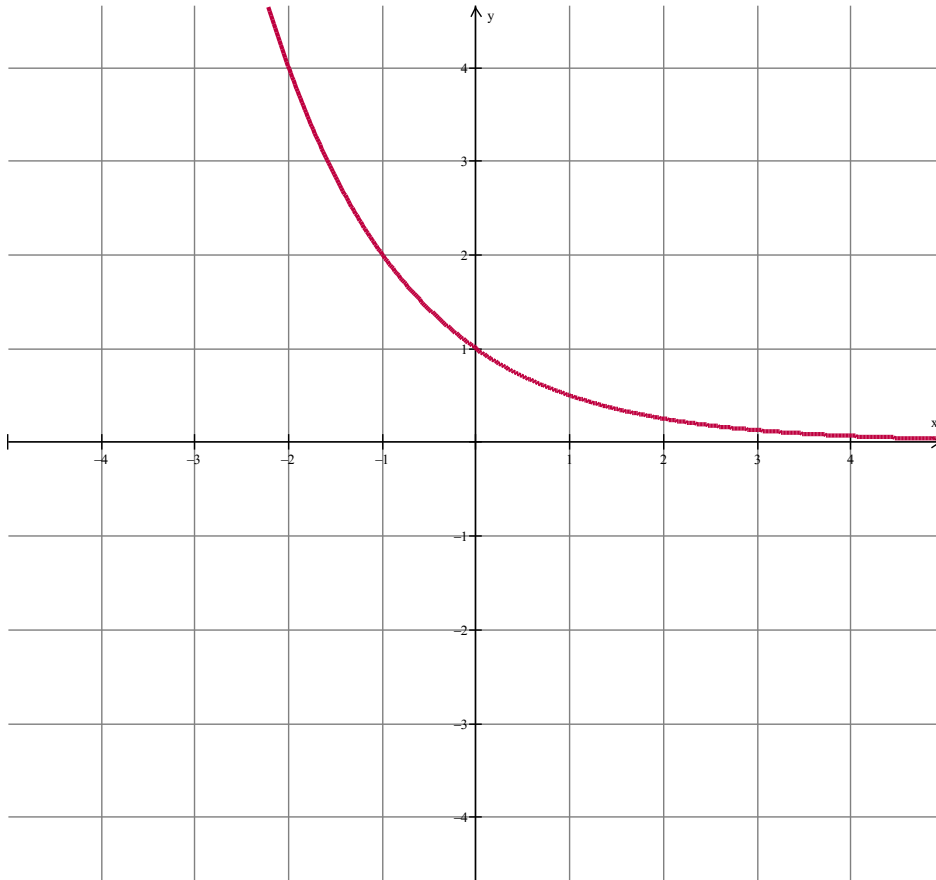
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**GRAPHING CALCULATORS ARE NOT PERMITTED ON THIS TEST**

**\*Full marks will NOT be given for the final answer only.**

When using a calculator, you should provide a decimal answer that is correct **to at least two decimal places** (unless otherwise indicated). Such rounding should occur **only** in the final step of the solution.

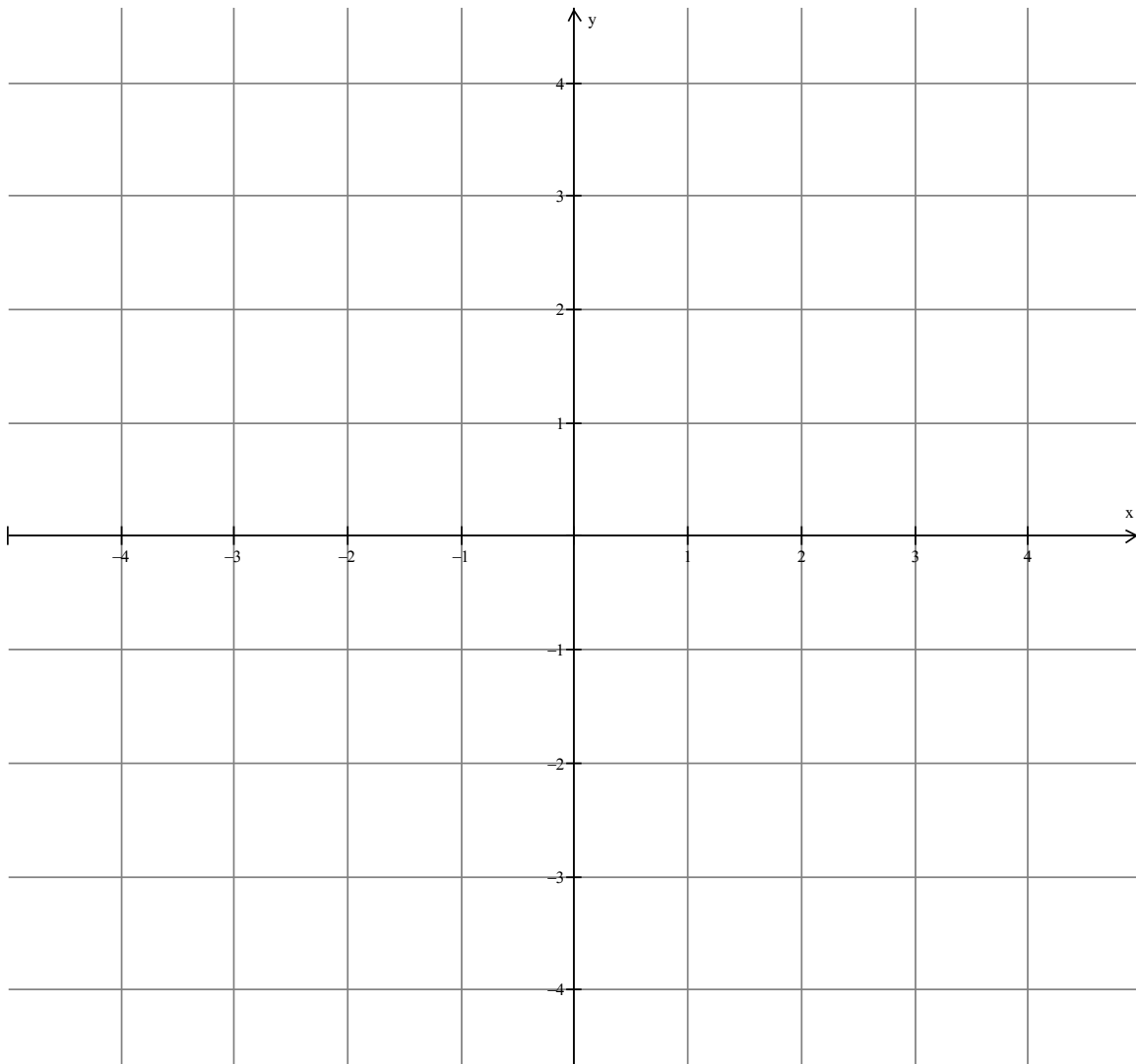
1. Determine the equation of the function graphed below. (2 marks)



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2. What transformations were applied to the function  $f(x) = 2^x$  to generate the function  $g(x) = 2^{-(2x)} - 1$  ? (3 marks)

3. Sketch the graph of the function  $g(x) = 2^{-(2x)} - 1$ . (2 marks)



4. What is the domain and range of the function  $y = -a^{(x-b)} + c$  where  $a, b, c$  are positive real numbers. (2 marks)

5. Solve each exponential equation (3 marks each).

a)  $9^{x-3} = 3^{1-x}$

b)  $8^{2x} = 16^{x+2}$