Name: _____   Student #:_____

Date:_____   T.A. #:_____
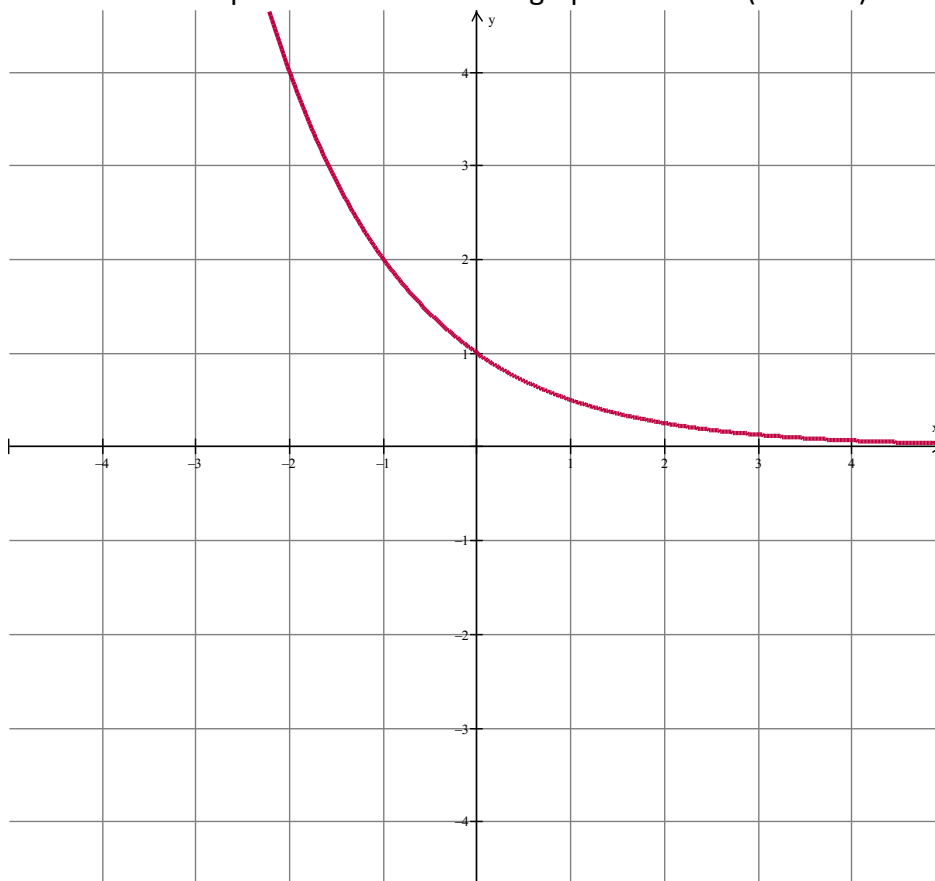
Mathematics 12 Pre-Calculus
LEARNING GUIDE 13 TEST
EXPONENTIAL FUNCTIONS & EQUATIONS

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*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.

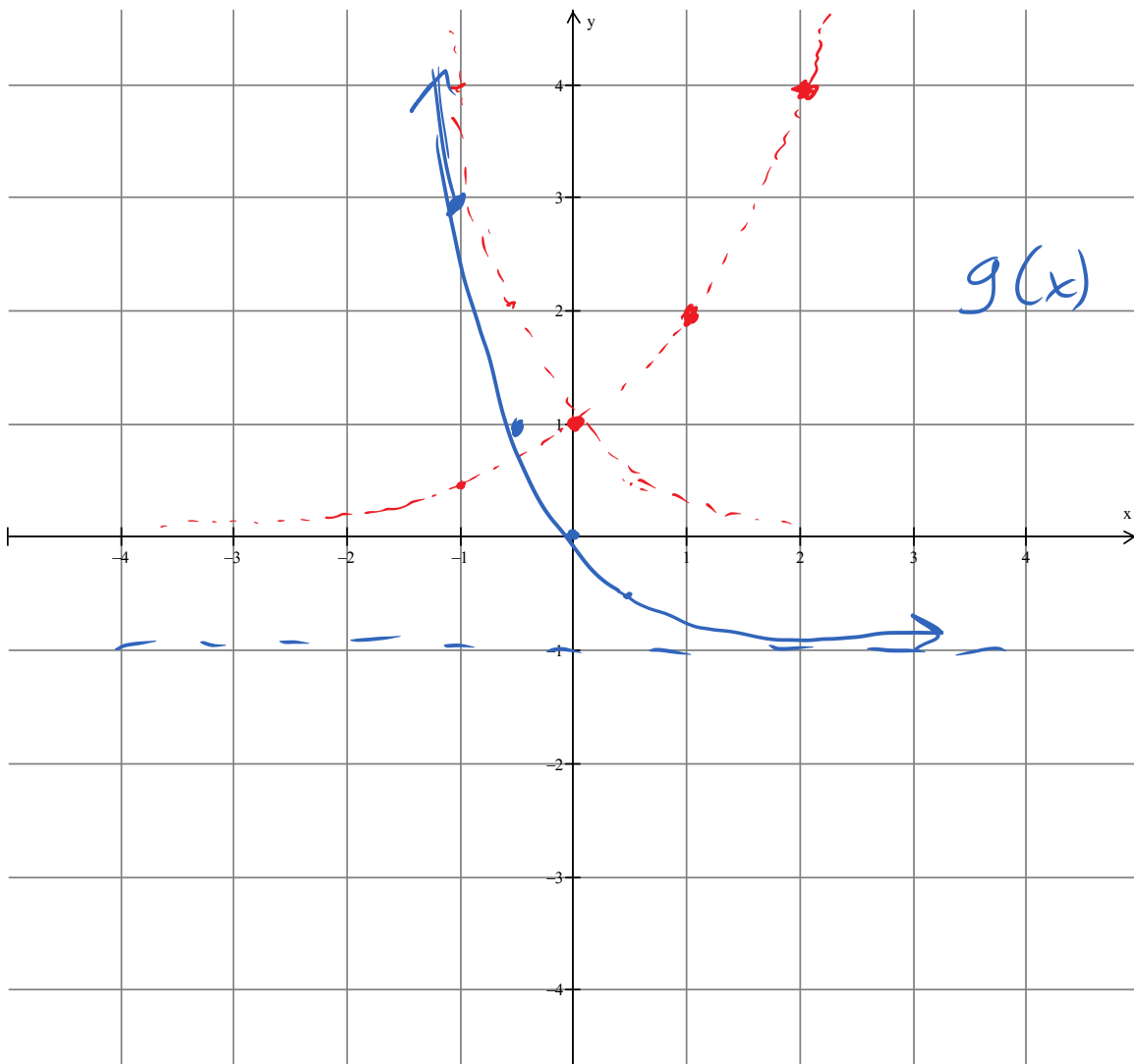1. Determine the equation of the function graphed below. (2 marks)

$$y = \frac{1}{2}^{x}$$

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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)

REFLECT IN y AXIS

HC BAFO $\frac{1}{2}$

DOWN 1

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

$g(x)$

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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)

D: $x \in R$

R: $y < c$

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

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

$3^{2(x-3)} = 3^{1-x}$

$2(x-3) = 1-x$

$2x-6 = 1-x$

$3x = 7$

$\boxed{x = \dfrac{7}{3}}$

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

$2^{3(2x)} = 2^{4(x+2)}$

$6x = 4x+8$

$2x = 8$

$\boxed{x = 4}$

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