Name: _____

MATH 101
Spring 2022
HW 12: Due 04/28

"You must do the things you think you cannot do."

–Eleanor Roosevelt

Problem 1. (10pt) Consider the function $f(x) = -5\left(\frac{4}{9}\right)^x$.

(a) Is this function exponential? Explain. If it is exponential, find A, b, and c.

(b) Find $f(-2)$.

(c) Find the x and y-intercepts for $f(x)$. If there are none, state so.

Problem 2. (10pt) Determine whether the following exponential functions are increasing or decreasing. Explain your answer for each.

(a) $y = 5(0.3)^x$

(b) $f(x) = -6(7^x)$

(c) $r = 9\left(\frac{3}{2}\right)^{-2t}$

(d) $g(x) = -7\left(\frac{12}{11}\right)^{x/2}$

Problem 3. (10pt) Write the following functions in the form $y = Ab^x$:

(a) $y = 11(2^{3x})$

(b) $y = -8\left(\frac{7}{3}\right)^{-x}$

(c) $y = 6(7^{2x+1})$

Problem 4. (10pt) Solve the following exponential equations:

(a) $4^{3-x} = \dfrac{1}{64}$

(b) $5(3^x) + 7 = 52$

(c) $16^{2x} = 4^{8x-1}$