Name: _____

MATH 101
Spring 2022
HW 15: Due 05/10

"If you think you can do a thing or think you can't do a thing, you're right."
–Henry Ford

Problem 1. (10pt) Write the following functions in the form $y = Ab^x$ and determine whether the function is increasing or decreasing:

(a) $f(x) = -6(7^{-2x+1})$

(b) $g(x) = 8\left(\frac{16}{9}\right)^{x/2}$

(c) $h(x) = -15\left(\frac{1}{2}\right)^{1-x}$

Problem 2. (10pt) Rewrite the following logarithm in terms of $\log_2 x$, $\log_2 y$, $\log_2 z$, and constants:

$$\log_2 \left(\frac{x^7}{4y^8} \right)$$

Problem 3. (10pt) Solve the following equation:

$$\log_3(5 - x) + 4 = 36$$

Problem 4. (10pt) Solve the following equation:

$$e^{2x-1} = 17$$

Problem 5. (10pt) Suppose you invest $500 in an account that earns 4.2% annual interest, compounded quarterly. How long until you have $800 saved?

Problem 6. (10pt) If you take out a $10,000 loan at a 7% annual interest rate, compounded continuously, how long until the loan amount has doubled?