

Exponentials and Logarithms - Practice Exam 1

Kyle Broder – ANU – MSI – 2017

Question 1. Solve the following equation for $x \in \mathbb{R}$,

$$\left|4 - e^{x + \frac{3}{4}}\right| = 1.$$

Question 2. Determine the value of $k \in \mathbb{R}$ such that

$$4e^x - ke^{-x} = 5,$$

has a unique solution.

Question 3. Solve the following equation for $x \in \mathbb{R}$,

$$\log_x(3) + \log_3(x) = 2.$$

Question 4. Graph the function $f : \mathbb{R} \setminus \{3\} \rightarrow \mathbb{R}$ defined by

$$f(x) := \frac{1}{2} \log_e |x - 3| + \frac{4}{5}.$$