Math 1113 C3 Precalculus Instructor: Dr. Predrag Punoševac

Exam 2

Student Name:_____
Student ID#:_____

Each problem is worth 5 points. Give a complete solution to receive the full credit!

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1. Which of the following logarithms are defined?
   (a) $\log_{0.1}(\log 10)$
   (b) $\log_{0.001} 3^{-2012}$
   (c) $\log_1 3$
   (d) $\log_{10^{-3}} \pi$
   (e) $\log_0 8$

2. If $\log_a b = 8,\ a > 0,\ a \neq 1,\ b > 0$, and $\log_3 a = 7$ find the value of $\log_3 3b$.

3. Find the domain of the function:

$$g(m) = \log \frac{(1-m)(m+9)}{m+2}.$$

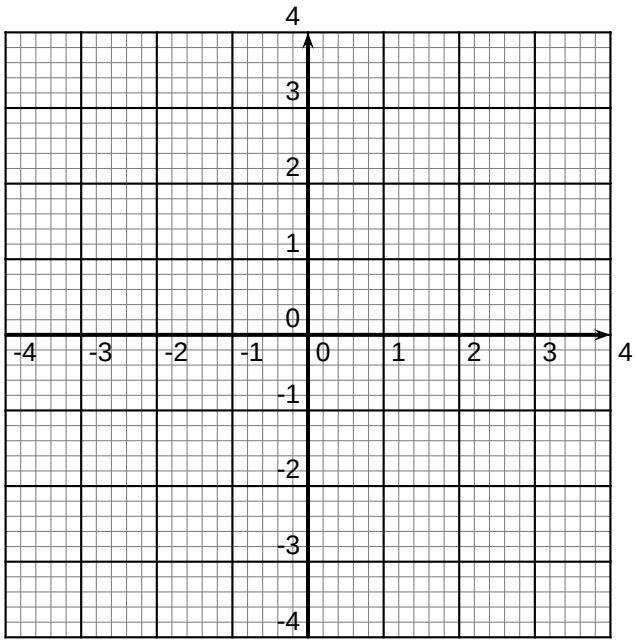
4. Solve the following exponential equation:

$$3 = \pi - e^{5-x}.$$

5. Solve the following logarithm equation:

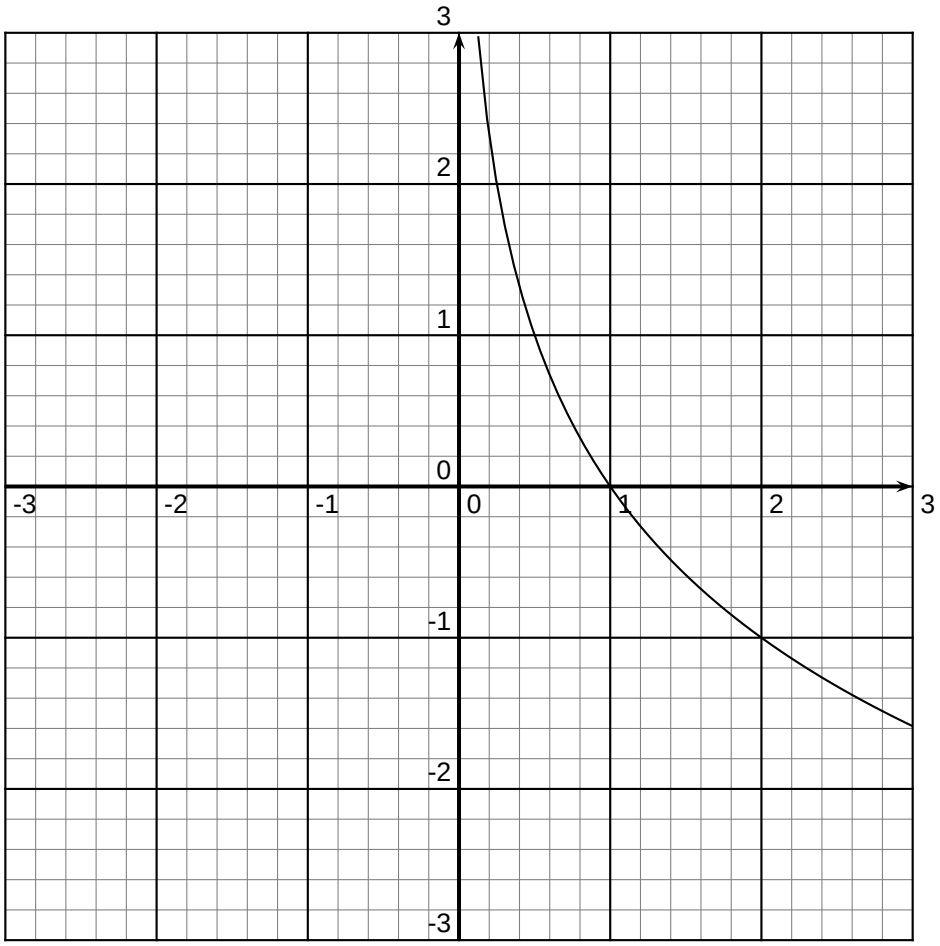
$$7 - 2\log(3-x)^{-1} = 9.$$

6. Plot the graph of the function $g(x) = \log_{2^{-1}}(x-2)+1$ using the grid provided below.



7. In a circle of radius 7, how long is the chord of an arc of 90°?

8. Find the function of the form $y = \log_a(x)$ whose graph is given.



9. In the old school of artillery, the officers would use a version of the approximation $\sin x \approx x$. However, they had to measure x in degrees, so they used $\sin x \approx x/60$ instead. What is the error in this approximation, if $x = 10°$?

10. The terminal point $P(x, y)$ determined by a real number t is given on the figure below. Find $\sin(t)$, $\cos(t)$, and $\tan(t)$.