Name:
Recitation Instructor, Day, Time:

TRADITIONAL MATH 100 – Exam 3 – April 2019

Directions: You will find 15 problems listed below. No notes/books/friends are allowed. Graphing calculator models above the level of a TI-84 plus are not allowed. You have one hour to complete this exam.

Page 1 20 pts.	Page 2 20 pts.	Page 3 20 pts.	Page 4 20 pts.	Page 5 20 pts	TOTAL 100 pts

1. (7 points) Find $f^{-1}(x)$ when $f(x) = 2x + 5$.

2. (7 points) Given $g(x) = x^2 - 9x$ and $h(x) = 4x + 3$, find $g(h(x))$.

3. (6 points) Expand completely using properties of logarithms (you may assume all variables to be positive): $\log\left(100x^3\sqrt{y}\right)$

4. (8 points) Solve the following rational equation: $\dfrac{2}{x-1} = \dfrac{3}{x}$

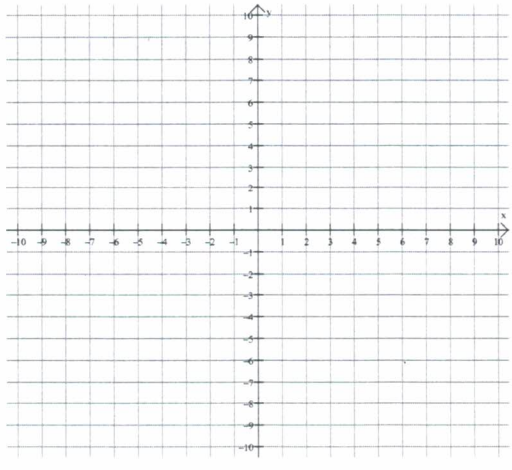
5. (6 points) Solve and check: $x - 2 = \sqrt{3x + 4}$

6. (6 points) Simplify i^{503}.

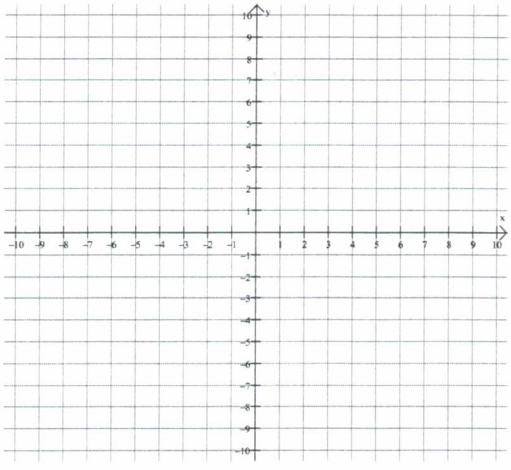
7. (6 points) Condense into a single logarithmic expression using the properties of logarithms (you may assume that x is positive): $\log(x) + \frac{1}{4}$

8. (8 points) Given that $x = 1$ is a zero of $p(x) = x^3 - 7x + 6$, find all the other zeros, real or complex, of $p(x)$.

9. (6 points) Graph the function $f(x) = \sqrt{x-2}$ on the graph below, include at least 4 points on this graph.Then, using your graph, solve the inquality $f(x) = \sqrt{x-2} < 1$.



10. (8 points) Graph the exponential function $f(x) = 3^x$. Then, graph the function $g(x) = \log_3(x)$ on the same grid. Include at least 5 points on each graph, and, include relevant asymptotes.



11. (6 points) Find a 3rd degree polynomial with zeros at $x = -1$, $x = 1$ and $x = 2$, that also passes through the point $(4, 9)$.

12. (6 points) Solve the rational inequality $\dfrac{x+3}{x} \geq 0$, remembering to check endpoints.

13. (6 points) Simplify and write in standard $a + bi$ form: $(9 - 4i)(2 + 3i)$

14. (6 points) Find the domain of the function $f(x) = 17 + \log(7 - 4x)$.

15. (8 points) Graph the rational function $r(x) = \dfrac{x^2 - 4}{x + 2}$.