Name:
Recitation Instructor, Day, Time:

TRADITIONAL MATH 100 – Exam 3 – April 2017

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 $f(x) = 2x + 9$.

2. (7 points) Given $g(x) = x^2 - 7x$ and $h(x) = 2x + 5$, find $g(h(x))$.

3. (6 points) Expand completely using properties of logarithms (you may assume all variables to be positive): $\log\left(\frac{100x\sqrt{y}}{5}\right)$

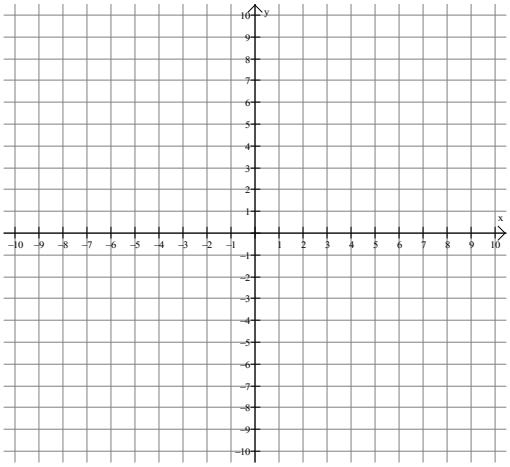
4. (8 points) Solve the following rational equation: $\dfrac{2x+14}{2x+11} = \dfrac{x+1}{x+4}$

5. (6 points) Solve and check: $3x - 2 = \sqrt{18x - 5}$

6. (6 points) Simplify i^{419}.

7. (6 points) Condense into a single logarithmic expression using the properties of logarithms (you may assume that x is positive): $\ln(x) - \frac{1}{8}$

8. (5 points) Graph the function $f(x) = \sqrt{x+4}$ on the graph below, include at least 4 points on this graph.Then, using your graph, solve the inquality $f(x) = \sqrt{x+4} < 3$.



9. (9 points) Fill in the blank:

   (a) $\log_5\left(\frac{1}{125}\right) =$ _____

   (b) $\log_3(243) =$ _____

   (c) $\log_B(\sqrt{B}) =$ _____

10. (8 points) Given that $x = -6$ is one zero of $p(x) = x^3 + 8x^2 + 17x + 30$, find all the other zeros, real or complex, of $p(x)$.

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

12. (6 points) Solve the rational inequality $\dfrac{2x+5}{x-7} \geq 0$, remembering to check endpoints.

13. (6 points) Simplify and write in standard $a + bi$ form: $(5 + 3i)(2 - 7i)$

14. (6 points) Find the domain of the function $f(x) = \log(-2x + 14)$.

15. (8 points) Graph the rational function $r(x) = \dfrac{x^2 - 4}{x + 2}$. Hint: You had homework problems similar to this question.