**Math 176 — Quiz 6**
**Professor Busken** **Name:** _____

**Directions: You may NOT use a calculator or any other electronic devices. Show your work on ALL of the questions. Do NOT work together. Tutor help NOT okay. Due Wednesday, September 25th at 5:30 pm., with no exceptions.**

1. (2 points) Evaluate $\ln(1) - \log_3(27) + 2^{\log_2(37)}$. 1. _____

2. (2 points) Evaluate $\log_3(9) - \log_{12}(144) + \log_7(\sqrt{7})$. 2. _____

3. (2 points) Identify the vertical asymptote for $f(x) = 5 - \log_4(x+2)$. 3. _____



4. (2 points) Describe the end behavior of the graph of $f(x) = 5 - \log_4(x+2)$.

4. _____

5. (2 points) Identify the domain interval of $f(x) = 5 - \log_4(x+2)$. 5. _____

6. (2 points) Identify the range interval of $f(x) = 5 - \log_4(x+2)$. 6. _____

7. (2 points) Use interval notation to write the domain of $f(x) = \log_5(x^2 - 2)$.

7. _____

8. (2 points) Identify the domain of $f(x) = \log_5(x^2 + 2)$.

8. _____

9. (3 points) Use the laws of logarithms to expand the expression $\log\left(\dfrac{x^2(1-5x)^{3/2}}{\sqrt{x^3 - x}}\right)$

9. _____



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**Solve $3^{x-1} = 22$ for $x$.**

10. (2 points) What is the exact solution?

10. _____

11. (1 point) What is the approximate solution to two decimal places? Use your calculator.

11. _____

12. (4 points) Solve $\log_5(x+1) - \log_5(x-1) = 2$ for $x$.

12. _____

13. (2 points) Identify the horizontal asymptote for $f(x) = 4 - 2 \cdot 7^{(x+3)}$.

13. _____



14. (2 points) Identify the domain of $f(x) = 4 - 2 \cdot 7^{(x+3)}$.

14. _____

15. (2 points) Identify the range of $f(x) = 4 - 2 \cdot 7^{(x+3)}$.

15. _____

16. (2 points) Describe the end behavior of the graph of $f(x) = 4 - 2 \cdot 7^{(x+3)}$.

16. _____