Math 131 Group Review Assignment (4.5, 5.1–5.4)

Print Name_____

SHOW–YOUR–WORK. **Work the problem in the space provided. Circle your final answer. If a question appears to not have instructions, the instructions for the previous question apply. Good luck and have fun!**

Simplify.

    1) $3^{\log_3 (9x)}$

Express as a product.

    2) $\log_c K^{-5}$

    3) $\log_a t^3$

Find a rational function that satisfies the given conditions. Answers may vary, but try to give the simplest answer possible.

   4) Vertical asymptotes $x = -1$, $x = 5$

5) Vertical asymptotes $x = -7, x = -1$

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. Write your answer in the blank provided and record your answer on the scantron answer sheet. (You will not be getting the scantron answer sheet back.) If a question appears to not have instructions, the instructions for the previous question apply. Good luck and have fun!

Using the horizontal–line test, determine whether the function is one–to–one.

6) $f(x) = \sqrt[3]{x - 1} + 1$
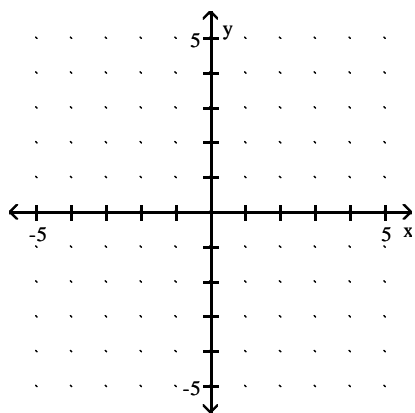
6) _____
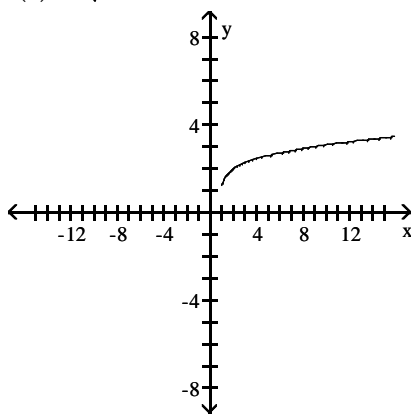
A) Yes

B) No

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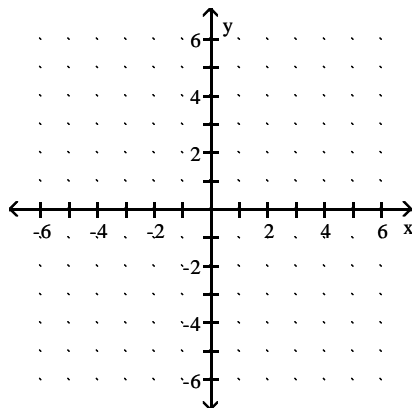**Evaluate to four decimal places using a calculator.**

7) $e^{0.03}$

Graph the function and its inverse using the same set of axes. Use any method.

8) $f(x) = 3\log x$; $f^{-1}(x) = 10^{x/3}$

Graph the function.

9) $f(x) = 5^{-x}$

Solve the problem.

10) A company begins a radio advertising campaign in Chicago to market a new soft drink. The percentage of the target market that buys a soft drink is estimated by the function $f(t) = 100(1 - e^{-0.06t})$, where t is the number of days of the campaign. After how long will 80% of the target market have bought the soft drink?

Find the value of the expression.

11) $\ln e^{-5}$

12) $\log_6 \sqrt{6}$

Find the vertical asymptote(s) of the graph of the given function.

13) $f(x) = \dfrac{x^2 + 3x - 10}{x^2 - 4x - 12}$

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Determine whether the function is one–to–one by graphing and using the horizontal line test.

14) $f(x) = -x^3 + 2$

14) _____
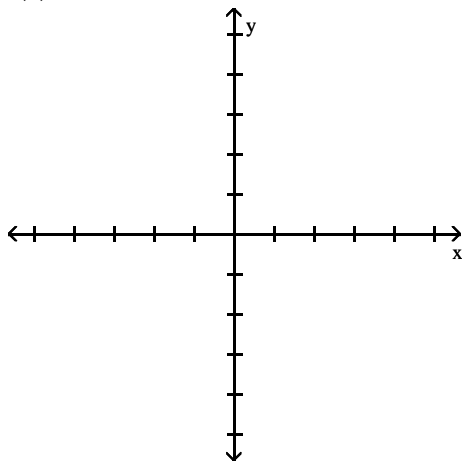
A) Yes

B) No

SHOW–YOUR–WORK. Work the problem in the space provided. Circle your final answer. If a question appears to not have instructions, the instructions for the previous question apply. Good luck and have fun!

Express as a sum of logarithms.

15) $\ln 7x$

Convert to an exponential equation.

    16) $\log 0.000001 = -6$

1) $9x$
   Objective: (5.4) Simplify Log Expression

2) $-5 \log_c K$
   Objective: (5.4) Express Log of Power as Product

3) $3 \log_a t$
   Objective: (5.4) Express Log of Power as Product

4) $f(x) = \dfrac{1}{x^2 - 4x - 5}$

   Objective: (4.5) Find Rational Function Satisfying Conditions

5) $f(x) = \dfrac{1}{x^2 + 8x + 7}$

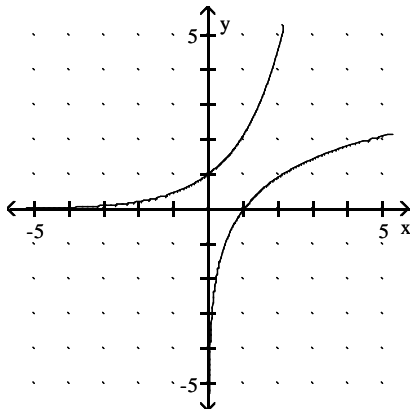   Objective: (4.5) Find Rational Function Satisfying Conditions

6) A
   Objective: (5.1) Determine if Function is One–to–One Given Graph (Y/N)
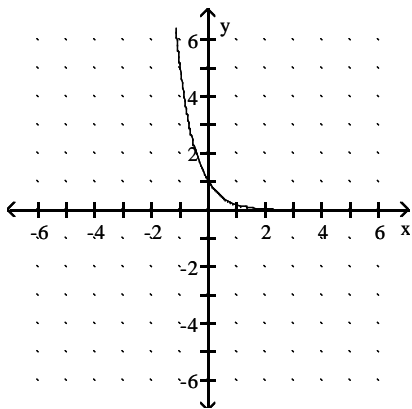
7) 1.0305
   Objective: (5.2) Tech: Use Calculator to Evaluate e^x

8)

   Objective: (5.3) Graph Logarithmic Function and its Inverse

9)

   Objective: (5.2) Graph Exponential Function

10) 27 days
    Objective: (5.2) Solve Apps: Exponential Functions

11) –5

Objective: (5.3) Evaluate Logarithmic Expression

12) $\dfrac{1}{2}$

Objective: (5.3) Evaluate Logarithmic Expression

13) x = –2, x = 6

Objective: (4.5) Find Vertical Asymptotes of Rational Function

14) A

Objective: (5.1) Determine if Function is One–to–One by Graphing (Y/N)

15) ln 7 + ln x

Objective: (5.4) Express Log of Product as Sum of Logarithms

16) $10^{-6} = 0.000001$

Objective: (5.3) Convert Logarithmic Equation to Exponential Equation