وزارة التعليم العالي
جامعة الملك سعود
عمادة السنة التحضيرية

King Saud University
Preparatory Year Deanship
Math Skill Department
First Semester

Chap.3

Math 130 (PreCalculus)
Benchmarks
Time Allowed: 90 Minutes
1431/1432

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

Explain whether the given equation defines an exponential function. Give the base for each exponential function.

1) $y = x^6$

2) $y = 2^x$

3) $y = 1^x$

4) $y = x^x$

Evaluate the exponential function for the given value.

5) $f(x) = 4^x$, $f(3)$

6) $f(x) = \left(\frac{1}{6}\right)^x$, $f(3)$

7) $f(x) = 4 - 3^{-x}$, $f(2)$

Convert to a logarithmic equation.

8) $2^3 = 8$

9) $16^{1/2} = 4$

10) $y^z = 8$

11) $3^{-3} = \frac{1}{27}$

Convert to an exponential equation.

12) $\log_3 81 = 4$

13) $\log_4 64 = t$

14) $\log_3 1 = 0$

15) $\log_7\left(\frac{1}{343}\right) = -3$

16) $\log_{243} 3 = \frac{1}{5}$

Evaluate the expression without a calculator.

17) $\log_2 32$

18) $\log 1{,}000{,}000$

19) $\log_{24} 1$

20) $\log_2 \frac{1}{4}$

21) $\log_{22} \sqrt{22}$

22) $\ln e^3$

23) $\log_2 (\log_3 3)$

24) $7^{\log_7 3}$

Solve the logarithmic equation.

25) $\log_8 x = 3$

26) $\log_{25} x = \frac{1}{2}$

27) $\log_6 x = -4$

28) $\ln x = 7$
Give your answer in exact form.

29) $\log_3(9x - 6) = 2$

30) $\log_{27} \sqrt{x - 2} = \frac{1}{3}$

31) $\log_2 (x^2 - 6x + 10) = 1$

Solve the equation.

32) $5^x = 25$

33) $\log_3 x = 4$

34) $4^{x-2} = 1$