Section 3.4

One to One Properties

$a^x = a^y$ if and only if $x = y$. $\log_a x = \log_a y$ if and only if $x = y$.

Inverse Properties

$a^{\log_a x} = x$, $\log_a a^x = x$.

Problem 1. In the following exercises, solve for x.

a) $4^x = 256$

b) $\left(\frac{1}{6}\right)^x = 216$

c) $e^x = 5$

d) $\ln x = -2$

e) $\log_4 x = -2$

Problem 2. Solve the exponential function algebraically, approximate the result to three decimal places.

a) $e^x = e^{x^2-42}$

b) $3(4^x) = 36$

c) $8e^x = 81$

d) $7^{4-x} = 382$

e) $e^{2x} + 18 = 9e^x$

Problem 3. Solve the logarithmic equation algebraically. Approximate the result to three decimal places.

a) $\log 5z = 4$

b) $\ln \sqrt{x-3} = 8$

c) $\ln x + \ln(x-3) = 1$

d) $\log_3(x+1) + \log_3 x = \log_3(x+4)$

e) $\log_4 x + \log_4(x-15) = 2$

Problem 4. Find the equation of the function $f(x)$ passing through the points $(4, 2)$ and $(8, 32)$ if $f(x)$ is

a) An exponential function.

b) A power function.

Homework: Read section 3.4, do #7, 13, 27, 37, 39, 51, 55, 60, 77