

# Advanced Math

3-4

## Exponential and Logarithmic Equations

Solve.

13)  $7^x = \frac{1}{49}$

$$7^x = 7^{-2}$$
$$\{ -2 \}$$

or

$$\times \ln 7^x = \ln\left(\frac{1}{49}\right)$$
$$x = \frac{\ln\left(\frac{1}{49}\right)}{\ln 7}$$

19)  $\log_{10} x = -1$

$$10^{-1} = x$$
$$\left\{ \frac{1}{10} \right\}$$

Simplify.

\*)  $\log_3 2^{5x-2}$

$$5x-2$$

Solve.

27)  $e^x = 10$

$$\ln e^x = \ln 10$$
$$x = \{ 2.303 \}$$

35)  $e^{2x} - 4e^x - 5 = 0$

$$(e^x + 1)(e^x - 5) = 0$$

$$e^x + 1 = 0 \quad e^x - 5 = 0$$

$$e^x = -1 \quad e^x = 5$$

$$x = \ln(-1) \quad x = \ln 5$$
$$\emptyset \quad \{ 1.609 \}$$

45)  $2^{3-x} = 565$

$$\ln 2^{3-x} = \ln 565$$
$$3-x = \frac{\ln 565}{\ln 2}$$

$$3 - \frac{\ln 565}{\ln 2} = x$$

$$\{ -6.142 \}$$

Assignment:  
pg 336  
12-50 even.